

ALMANAC

XII

PLANETARY

PHENOMENA OF

SATURN IN CE



**The almanac XII contains a list of planetary phenomena of Saturn from the 1st millennium CE to the 6th millennium CE, from the 1st century CE to the 51st century CE.**



Attention, astronomical year style is used: The year -11 in astronomical counting style is the year 12 BCE in historical counting style.

min. Earth dist.	-11 Jul 12 j 00:51	16° $\text{𐌸}$ 02'51	8.86683 AU		-5 Oct 29 j 08:00	30° $\text{𐌹}$ $\text{𐌹}$	
direct	-11 Sep 19 j 07:13	12° $\text{𐌸}$ 45'14		direct	-5 Dec 03 j 18:10	28° $\text{𐌹}$ 53'04	
evening set	-11 Dec 27 j 21:35	19° $\text{𐌸}$ 52'00			-4 Jan 07 j 13:34	0° $\text{𐌹}$	
				evening set	-4 Mar 14 j 11:24	6° $\text{𐌹}$ 47'50	
conjunction	-10 Jan 13 j 15:45	21° $\text{𐌸}$ 52'38	0°-38'-3				
minimum elong	-10 Jan 13 j 15:43	21° $\text{𐌸}$ 52'37	0°38'04	conjunction	-4 Apr 01 j 00:36	9° $\text{𐌹}$ 03'06	-2°-17'-56
max. Earth dist.	-10 Jan 13 j 09:27	21° $\text{𐌸}$ 50'44	10.81793 AU	minimum elong	-4 Apr 01 j 00:37	9° $\text{𐌹}$ 03'07	2°17'57
morning rise	-10 Jan 30 j 13:02	23° $\text{𐌸}$ 54'15		max. Earth dist.	-4 Apr 01 j 02:18	9° $\text{𐌹}$ 03'39	10.13865 AU
	-10 Apr 03 j 19:02	0° $\text{𐌹}$		morning rise	-4 Apr 18 j 18:04	11° $\text{𐌹}$ 19'47	
retrograde	-10 May 14 j 15:33	1° $\text{𐌹}$ 20'11		retrograde	-4 Aug 04 j 02:18	19° $\text{𐌹}$ 40'05	
	-10 Jun 25 j 08:18	30° $\text{𐌹}$ $\text{𐌹}$		opposition	-4 Oct 11 j 05:37	16° $\text{𐌹}$ 10'19	-2°-49'-27
opposition	-10 Jul 24 j 09:19	27° $\text{𐌸}$ 57'33	-1°-3'-50	min. Earth dist.	-4 Oct 11 j 03:25	16° $\text{𐌹}$ 10'46	8.09764 AU
min. Earth dist.	-10 Jul 24 j 14:08	27° $\text{𐌸}$ 56'38	8.76492 AU	direct	-4 Dec 16 j 13:09	12° $\text{𐌹}$ 44'33	
direct	-10 Oct 01 j 08:50	24° $\text{𐌸}$ 38'18		evening set	-3 Mar 29 j 01:39	20° $\text{𐌹}$ 47'32	
	-10 Dec 24 j 01:12	0° $\text{𐌹}$					
evening set	-9 Jan 08 j 23:11	1° $\text{𐌹}$ 50'49		conjunction	-3 Apr 15 j 19:25	23° $\text{𐌹}$ 05'18	-2°-11'-56
				minimum elong	-3 Apr 15 j 19:27	23° $\text{𐌹}$ 05'19	2°11'57
conjunction	-9 Jan 25 j 19:27	3° $\text{𐌹}$ 53'24	-1°-5'-2	max. Earth dist.	-3 Apr 15 j 22:55	23° $\text{𐌹}$ 06'26	10.05920 AU
minimum elong	-9 Jan 25 j 19:25	3° $\text{𐌹}$ 53'23	1°05'04	morning rise	-3 May 03 j 16:49	25° $\text{𐌹}$ 24'18	
max. Earth dist.	-9 Jan 25 j 14:18	3° $\text{𐌹}$ 51'50	10.70966 AU		-3 Jun 11 j 23:08	0° $\text{𐌹}$	
morning rise	-9 Feb 11 j 19:24	5° $\text{𐌹}$ 57'10		retrograde	-3 Aug 18 j 20:41	3° $\text{𐌹}$ 48'29	
retrograde	-9 May 27 j 18:17	13° $\text{𐌹}$ 32'37		opposition	-3 Oct 25 j 11:08	0° $\text{𐌹}$ 18'19	-2°-37'-7
opposition	-9 Aug 06 j 05:36	10° $\text{𐌹}$ 08'36	-1°-35'-59	min. Earth dist.	-3 Oct 25 j 07:31	0° $\text{𐌹}$ 19'03	8.03053 AU
min. Earth dist.	-9 Aug 06 j 09:09	10° $\text{𐌹}$ 07'55	8.65180 AU		-3 Oct 29 j 04:07	30° $\text{𐌹}$ $\text{𐌹}$	
direct	-9 Oct 13 j 15:44	6° $\text{𐌹}$ 48'39		direct	-3 Dec 30 j 15:40	26° $\text{𐌹}$ 51'19	
evening set	-8 Jan 21 j 09:35	14° $\text{𐌹}$ 08'11			-2 Feb 28 j 12:58	0° $\text{𐌹}$	
	-8 Jan 28 j 11:33	15° $\text{𐌹}$		evening set	-2 Apr 12 j 23:49	5° $\text{𐌹}$ 01'01	
conjunction	-8 Feb 07 j 08:11	16° $\text{𐌹}$ 12'59	-1°-29'-40	conjunction	-2 Apr 30 j 21:51	7° $\text{𐌹}$ 20'50	-1°-57'-53
minimum elong	-8 Feb 07 j 08:08	16° $\text{𐌹}$ 12'58	1°29'42	minimum elong	-2 Apr 30 j 21:55	7° $\text{𐌹}$ 20'51	1°57'53
max. Earth dist.	-8 Feb 07 j 03:39	16° $\text{𐌹}$ 11'35	10.59240 AU	max. Earth dist.	-2 May 01 j 02:49	7° $\text{𐌹}$ 22'28	10.00587 AU
morning rise	-8 Feb 24 j 11:09	18° $\text{𐌹}$ 19'09		morning rise	-2 May 18 j 22:43	9° $\text{𐌹}$ 41'35	
retrograde	-8 Jun 09 j 05:52	26° $\text{𐌹}$ 04'40			-2 Jul 04 j 04:43	15° $\text{𐌹}$	
opposition	-8 Aug 18 j 08:03	22° $\text{𐌹}$ 39'15	-2°-4'-33	retrograde	-2 Sep 02 j 15:23	18° $\text{𐌹}$ 06'35	
min. Earth dist.	-8 Aug 18 j 10:46	22° $\text{𐌹}$ 38'44	8.53230 AU		-2 Nov 04 j 00:52	15° $\text{𐌹}$ $\text{𐌹}$	
direct	-8 Oct 25 j 04:34	19° $\text{𐌹}$ 18'22		opposition	-2 Nov 08 j 18:51	14° $\text{𐌹}$ 36'24	-2°-14'-55
evening set	-7 Feb 02 j 06:03	26° $\text{𐌹}$ 46'01		min. Earth dist.	-2 Nov 08 j 14:20	14° $\text{𐌹}$ 37'21	7.99154 AU
				direct	-1 Jan 14 j 01:09	11° $\text{𐌹}$ 08'20	
conjunction	-7 Feb 19 j 07:28	28° $\text{𐌹}$ 53'14	-1°-50'-36		-1 Mar 22 j 03:41	15° $\text{𐌹}$	
minimum elong	-7 Feb 19 j 07:25	28° $\text{𐌹}$ 53'14	1°50'36	evening set	-1 Apr 28 j 03:24	19° $\text{𐌹}$ 22'41	
max. Earth dist.	-7 Feb 19 j 03:36	28° $\text{𐌹}$ 52'02	10.47126 AU				
	-7 Feb 28 j 05:11	0° $\text{𐌹}$		conjunction	-1 May 16 j 05:04	21° $\text{𐌹}$ 43'53	-1°-36'-26
morning rise	-7 Mar 08 j 13:46	1° $\text{𐌹}$ 01'59		minimum elong	-1 May 16 j 05:08	21° $\text{𐌹}$ 43'55	1°36'27
retrograde	-7 Jun 23 j 00:51	8° $\text{𐌹}$ 57'36		max. Earth dist.	-1 May 16 j 11:17	21° $\text{𐌹}$ 45'56	9.98261 AU
opposition	-7 Aug 31 j 16:37	5° $\text{𐌹}$ 30'50	-2°-27'-47	morning rise	-1 Jun 03 j 08:31	24° $\text{𐌹}$ 05'39	
min. Earth dist.	-7 Aug 31 j 18:51	5° $\text{𐌹}$ 30'24	8.41162 AU		-1 Jul 26 j 03:31	0° $\text{𐌹}$	
direct	-7 Nov 07 j 00:33	2° $\text{𐌹}$ 08'49		retrograde	-1 Sep 17 j 07:11	2° $\text{𐌹}$ 28'16	
evening set	-6 Feb 15 j 13:05	9° $\text{𐌹}$ 45'20			-1 Nov 10 j 14:17	30° $\text{𐌹}$ $\text{𐌹}$	
				opposition	-1 Nov 23 j 02:57	28° $\text{𐌹}$ 58'30	-1°-44'-9
conjunction	-6 Mar 04 j 17:57	11° $\text{𐌹}$ 55'10	-2°-6'-26	min. Earth dist.	-1 Nov 22 j 21:47	28° $\text{𐌹}$ 59'34	7.98358 AU
minimum elong	-6 Mar 04 j 17:55	11° $\text{𐌹}$ 55'09	2°06'26	direct	00 Jan 28 j 14:56	25° $\text{𐌹}$ 29'32	
max. Earth dist.	-6 Mar 04 j 15:36	11° $\text{𐌹}$ 54'25	10.35147 AU		00 Apr 11 j 00:55	0° $\text{𐌹}$	
morning rise	-6 Mar 22 j 03:46	14° $\text{𐌹}$ 06'34		evening set	00 May 12 j 09:29	3° $\text{𐌹}$ 46'12	
retrograde	-6 Jul 07 j 02:25	22° $\text{𐌹}$ 11'47					
opposition	-6 Sep 14 j 07:24	18° $\text{𐌹}$ 43'46	-2°-43'-58	conjunction	00 May 30 j 13:41	6° $\text{𐌹}$ 07'56	-1°-8'-58
min. Earth dist.	-6 Sep 14 j 08:35	18° $\text{𐌹}$ 43'32	8.29493 AU	minimum elong	00 May 30 j 13:44	6° $\text{𐌹}$ 07'57	1°08'58
direct	-6 Nov 20 j 05:51	15° $\text{𐌹}$ 20'31		max. Earth dist.	00 May 30 j 20:46	6° $\text{𐌹}$ 10'15	9.99095 AU
evening set	-5 Mar 01 j 06:52	23° $\text{𐌹}$ 06'15		morning rise	00 Jun 17 j 18:22	8° $\text{𐌹}$ 29'47	
				retrograde	00 Sep 30 j 18:31	16° $\text{𐌹}$ 47'11	
conjunction	-5 Mar 18 j 15:40	25° $\text{𐌹}$ 18'48	-2°-15'-53	opposition	00 Dec 06 j 09:38	13° $\text{𐌹}$ 18'10	-1°-6'-57
minimum elong	-5 Mar 18 j 15:39	25° $\text{𐌹}$ 18'47	2°15'54	min. Earth dist.	00 Dec 06 j 03:59	13° $\text{𐌹}$ 19'21	8.00703 AU
max. Earth dist.	-5 Mar 18 j 15:15	25° $\text{𐌹}$ 18'40	10.23843 AU	direct	01 Feb 11 j 06:22	9° $\text{𐌹}$ 48'36	
morning rise	-5 Apr 05 j 05:13	27° $\text{𐌹}$ 32'52		evening set	01 May 27 j 15:08	18° $\text{𐌹}$ 05'08	
	-5 Apr 25 j 11:14	0° $\text{𐌹}$					
retrograde	-5 Jul 21 j 11:05	5° $\text{𐌹}$ 46'36		conjunction	01 Jun 14 j 20:12	20° $\text{𐌹}$ 26'26	0°-37'-23
opposition	-5 Sep 28 j 04:00	2° $\text{𐌹}$ 17'33	-2°-51'-35	minimum elong	01 Jun 14 j 20:14	20° $\text{𐌹}$ 26'27	0°37'23
min. Earth dist.	-5 Sep 28 j 03:37	2° $\text{𐌹}$ 17'38	8.18795 AU	max. Earth dist.	01 Jun 15 j 03:51	20° $\text{𐌹}$ 28'55	10.03001 AU



morning rise	01 Jul 03 j 00:23	22° $\Pi$ 47'23		minimum elong	07 Sep 06 j 01:04	10° $\Pi$ 24'19	2°05'12
	01 Sep 12 j 19:45	0° $\mathfrak{S}$		max. Earth dist.	07 Sep 06 j 03:08	10° $\Pi$ 24'57	10.66014 AU
retrograde	01 Oct 15 j 00:25	0° $\mathfrak{S}$ 57'20		morning rise	07 Sep 23 j 02:36	12° $\Pi$ 28'24	
	01 Nov 16 j 10:50	30° $\mathfrak{R}\Pi$		retrograde	07 Dec 31 j 15:31	19° $\Pi$ 43'33	
opposition	01 Dec 20 j 13:10	27° $\Pi$ 29'21	0°-26'-1	opposition	08 Mar 08 j 16:46	16° $\Pi$ 23'55	2°40'56
min. Earth dist.	01 Dec 20 j 06:51	27° $\Pi$ 30'39	8.06008 AU	min. Earth dist.	08 Mar 08 j 14:44	16° $\Pi$ 24'19	8.72032 AU
direct	02 Feb 25 j 21:15	23° $\Pi$ 59'31		direct	08 May 18 j 07:27	12° $\Pi$ 58'41	
	02 May 24 j 13:17	0° $\mathfrak{S}$		evening set	08 Aug 31 j 12:02	20° $\Pi$ 31'01	
evening set	02 Jun 11 j 17:04	2° $\mathfrak{S}$ 13'36					
conjunction	02 Jun 29 j 21:16	4° $\mathfrak{S}$ 33'31	0°-3'-57	conjunction	08 Sep 17 j 13:35	22° $\Pi$ 33'47	2°15'19
minimum elong	02 Jun 29 j 21:18	4° $\mathfrak{S}$ 33'31	0°03'57	minimum elong	08 Sep 17 j 13:34	22° $\Pi$ 33'47	2°15'19
behind sun begin	02 Jun 29 j 14:02	4° $\mathfrak{S}$ 31'12		max. Earth dist.	08 Sep 17 j 14:39	22° $\Pi$ 34'06	10.77595 AU
behind sun end	02 Jun 30 j 04:33	4° $\mathfrak{S}$ 35'51		morning rise	08 Oct 04 j 10:29	24° $\Pi$ 35'10	
max. Earth dist.	02 Jun 30 j 05:26	4° $\mathfrak{S}$ 36'08	10.09692 AU		08 Nov 27 j 10:34	0° $\mathfrak{L}$	
morning rise	02 Jul 17 j 23:14	6° $\mathfrak{S}$ 52'41		retrograde	09 Jan 11 j 18:31	1° $\mathfrak{L}$ 43'44	
asc. node	02 Aug 12 j 20:31	9° $\mathfrak{S}$ 59'25			09 Feb 27 j 13:38	30° $\mathfrak{R}\Pi$	
retrograde	02 Oct 28 j 23:23	14° $\mathfrak{S}$ 53'38		opposition	09 Mar 21 j 05:39	28° $\Pi$ 25'13	2°49'17
opposition	03 Jan 03 j 12:18	11° $\mathfrak{S}$ 26'55	0°15'46	min. Earth dist.	09 Mar 21 j 04:37	28° $\Pi$ 25'24	8.83110 AU
min. Earth dist.	03 Jan 03 j 05:33	11° $\mathfrak{S}$ 28'18	8.13908 AU	direct	09 May 31 j 03:39	25° $\Pi$ 01'22	
direct	03 Mar 12 j 09:26	7° $\mathfrak{S}$ 57'08			09 Aug 22 j 03:23	0° $\mathfrak{L}$	
evening set	03 Jun 26 j 12:32	16° $\mathfrak{S}$ 06'46		evening set	09 Sep 12 j 19:33	2° $\mathfrak{L}$ 25'57	
conjunction	03 Jul 14 j 14:16	18° $\mathfrak{S}$ 24'29	0°29'17	conjunction	09 Sep 29 j 17:03	4° $\mathfrak{L}$ 26'21	2°19'21
minimum elong	03 Jul 14 j 14:15	18° $\mathfrak{S}$ 24'29	0°29'18	minimum elong	09 Sep 29 j 17:02	4° $\mathfrak{L}$ 26'21	2°19'21
max. Earth dist.	03 Jul 14 j 22:29	18° $\mathfrak{S}$ 27'07	10.18710 AU	max. Earth dist.	09 Sep 29 j 17:10	4° $\mathfrak{L}$ 26'23	10.87999 AU
morning rise	03 Aug 01 j 12:29	20° $\mathfrak{S}$ 41'07		morning rise	09 Oct 16 j 10:12	6° $\mathfrak{L}$ 25'32	
retrograde	03 Nov 11 j 14:01	28° $\mathfrak{S}$ 32'18		retrograde	10 Jan 23 j 15:59	13° $\mathfrak{L}$ 28'46	
opposition	04 Jan 17 j 06:04	25° $\mathfrak{S}$ 06'59	0°55'45	opposition	10 Apr 02 j 14:15	10° $\mathfrak{L}$ 11'08	2°50'19
min. Earth dist.	04 Jan 16 j 23:38	25° $\mathfrak{S}$ 08'17	8.23876 AU	min. Earth dist.	10 Apr 02 j 15:07	10° $\mathfrak{L}$ 10'59	8.92788 AU
direct	04 Mar 25 j 17:23	21° $\mathfrak{S}$ 37'36		direct	10 Jun 12 j 17:48	6° $\mathfrak{L}$ 48'38	
evening set	04 Jul 09 j 23:45	29° $\mathfrak{S}$ 41'12		evening set	10 Sep 24 j 18:53	14° $\mathfrak{L}$ 06'10	
	04 Jul 12 j 12:21	0° $\mathfrak{L}$					
conjunction	04 Jul 27 j 21:30	1° $\mathfrak{L}$ 56'08	1°00'09	conjunction	10 Oct 11 j 13:01	16° $\mathfrak{L}$ 04'38	2°17'30
minimum elong	04 Jul 27 j 21:27	1° $\mathfrak{L}$ 56'07	1°00'09	minimum elong	10 Oct 11 j 13:01	16° $\mathfrak{L}$ 04'38	2°17'31
max. Earth dist.	04 Jul 28 j 04:59	1° $\mathfrak{L}$ 58'30	10.29474 AU	max. Earth dist.	10 Oct 11 j 10:58	16° $\mathfrak{L}$ 04'02	10.96820 AU
morning rise	04 Aug 14 j 14:51	4° $\mathfrak{L}$ 09'43		morning rise	10 Oct 28 j 03:33	18° $\mathfrak{L}$ 02'06	
retrograde	04 Nov 23 j 20:29	11° $\mathfrak{L}$ 50'58		retrograde	11 Feb 04 j 10:34	25° $\mathfrak{L}$ 01'21	
opposition	05 Jan 29 j 17:49	8° $\mathfrak{L}$ 27'09	1°31'38	opposition	11 Apr 14 j 19:09	21° $\mathfrak{L}$ 44'22	2°44'24
min. Earth dist.	05 Jan 29 j 12:32	8° $\mathfrak{L}$ 28'13	8.35304 AU	min. Earth dist.	11 Apr 14 j 21:49	21° $\mathfrak{L}$ 43'52	9.00696 AU
direct	05 Apr 08 j 18:49	4° $\mathfrak{L}$ 58'27		direct	11 Jun 25 j 02:33	18° $\mathfrak{L}$ 23'05	
evening set	05 Jul 24 j 01:00	12° $\mathfrak{L}$ 54'54		evening set	11 Oct 06 j 11:19	25° $\mathfrak{L}$ 34'25	
	05 Aug 09 j 20:20	15° $\mathfrak{L}$					
conjunction	05 Aug 10 j 17:47	15° $\mathfrak{L}$ 06'42	1°27'07	conjunction	11 Oct 23 j 02:57	27° $\mathfrak{L}$ 31'29	2°10'09
minimum elong	05 Aug 10 j 17:43	15° $\mathfrak{L}$ 06'41	1°27'07	minimum elong	11 Oct 23 j 02:59	27° $\mathfrak{L}$ 31'29	2°10'09
max. Earth dist.	05 Aug 10 j 23:45	15° $\mathfrak{L}$ 08'34	10.41362 AU	max. Earth dist.	11 Oct 22 j 22:55	27° $\mathfrak{L}$ 30'18	11.03730 AU
morning rise	05 Aug 28 j 05:45	17° $\mathfrak{L}$ 17'01		morning rise	11 Nov 08 j 15:50	29° $\mathfrak{L}$ 27'44	
retrograde	05 Dec 06 j 18:40	24° $\mathfrak{L}$ 48'44			11 Nov 13 j 08:23	0° $\mathfrak{M}$	
opposition	06 Feb 11 j 23:32	21° $\mathfrak{L}$ 26'25	2°01'46	retrograde	12 Feb 16 j 01:45	6° $\mathfrak{M}$ 24'27	
min. Earth dist.	06 Feb 11 j 19:42	21° $\mathfrak{L}$ 27'10	8.47560 AU	opposition	12 Apr 25 j 21:33	3° $\mathfrak{M}$ 07'47	2°32'07
direct	06 Apr 22 j 13:45	17° $\mathfrak{L}$ 58'40		min. Earth dist.	12 Apr 26 j 01:06	3° $\mathfrak{M}$ 07'08	9.06534 AU
evening set	06 Aug 06 j 15:18	25° $\mathfrak{L}$ 47'14		direct	12 Jun 20 j 02:59	30° $\mathfrak{R}\mathfrak{L}$	
					12 Jul 06 j 06:22	29° $\mathfrak{L}$ 47'37	
conjunction	06 Aug 24 j 02:43	27° $\mathfrak{L}$ 55'50	1°49'02	evening set	12 Jul 22 j 07:09	0° $\mathfrak{M}$	
minimum elong	06 Aug 24 j 02:40	27° $\mathfrak{L}$ 55'49	1°49'01		12 Oct 16 j 22:10	6° $\mathfrak{M}$ 53'46	
max. Earth dist.	06 Aug 24 j 06:28	27° $\mathfrak{L}$ 56'59	10.53747 AU	conjunction	12 Nov 02 j 12:17	8° $\mathfrak{M}$ 49'53	1°57'46
	06 Sep 09 j 23:39	0° $\mathfrak{M}$		minimum elong	12 Nov 02 j 12:19	8° $\mathfrak{M}$ 49'54	1°57'46
morning rise	06 Sep 10 j 09:19	0° $\mathfrak{M}$ 02'56		max. Earth dist.	12 Nov 02 j 07:40	8° $\mathfrak{M}$ 48'32	11.08465 AU
retrograde	06 Dec 19 j 07:55	7° $\mathfrak{M}$ 25'51		morning rise	12 Nov 19 j 00:14	10° $\mathfrak{M}$ 45'26	
opposition	07 Feb 24 j 23:04	4° $\mathfrak{M}$ 04'57	2°25'02		12 Dec 30 j 03:57	15° $\mathfrak{M}$	
min. Earth dist.	07 Feb 24 j 20:15	4° $\mathfrak{M}$ 05'30	8.60005 AU	retrograde	13 Feb 26 j 18:40	17° $\mathfrak{M}$ 41'08	
direct	07 May 06 j 02:18	0° $\mathfrak{M}$ 38'23			13 Apr 29 j 20:04	15° $\mathfrak{R}\mathfrak{M}$	
evening set	07 Aug 19 j 18:52	8° $\mathfrak{M}$ 18'48		opposition	13 May 07 j 22:19	14° $\mathfrak{M}$ 24'29	2°14'06
				min. Earth dist.	13 May 08 j 02:17	14° $\mathfrak{M}$ 23'45	9.10076 AU
conjunction	07 Sep 06 j 01:06	10° $\mathfrak{M}$ 24'19	2°05'13	direct	13 Jul 18 j 06:57	11° $\mathfrak{M}$ 05'14	
					13 Sep 29 j 03:47	15° $\mathfrak{M}$	
				evening set	13 Oct 28 j 05:25	18° $\mathfrak{M}$ 07'24	



conjunction	13 Nov 13 j 18:46	20°♄03'05	1°40'56	conjunction	20 Jan 20 j 17:20	28°♄43'58	0°-53'-6
minimum elong	13 Nov 13 j 18:48	20°♄03'05	1°40'56	minimum elong	20 Jan 20 j 17:19	28°♄43'57	0°53'08
max. Earth dist.	13 Nov 13 j 13:28	20°♄01'31	11.10829 AU	max. Earth dist.	20 Jan 20 j 09:14	28°♄41'30	10.75418 AU
morning rise	13 Nov 30 j 06:36	21°♄58'24			20 Jan 31 j 04:01	0°≈	
retrograde	14 Mar 10 j 11:42	28°♄54'31		morning rise	20 Feb 06 j 16:10	0°≈46'48	
opposition	14 May 19 j 22:19	25°♄37'39	1°51'05	retrograde	20 May 21 j 04:45	8°≈18'03	
min. Earth dist.	14 May 20 j 03:37	25°♄36'40	9.11168 AU	opposition	20 Jul 30 j 20:11	4°≈54'27	-1°-21'-53
direct	14 Jul 30 j 01:42	22°♄19'04		min. Earth dist.	20 Jul 31 j 02:18	4°≈53'17	8.69554 AU
evening set	14 Nov 08 j 10:42	29°♄18'38		direct	20 Oct 07 j 12:26	1°≈34'30	
	14 Nov 14 j 09:49	0°♂		evening set	21 Jan 15 j 04:24	8°≈51'01	
conjunction	14 Nov 24 j 23:48	1°♂14'19	1°20'17	conjunction	21 Feb 01 j 01:55	10°≈54'53	-1°-18'-58
minimum elong	14 Nov 24 j 23:50	1°♂14'20	1°20'17	minimum elong	21 Feb 01 j 01:53	10°≈54'53	1°19'00
max. Earth dist.	14 Nov 24 j 16:37	1°♂12'13	11.10687 AU	max. Earth dist.	21 Jan 31 j 19:30	10°≈52'55	10.63530 AU
morning rise	14 Dec 11 j 12:24	3°♂09'55		morning rise	21 Feb 18 j 03:35	13°≈00'04	
retrograde	15 Mar 22 j 05:12	10°♂08'06			21 Mar 07 j 06:05	15°≈	
opposition	15 May 31 j 22:48	6°♂50'42	1°23'51	retrograde	21 Jun 03 j 12:14	20°≈41'20	
min. Earth dist.	15 Jun 01 j 05:45	6°♂49'26	9.09705 AU	opposition	21 Aug 12 j 19:52	17°≈16'06	-1°-52'-18
direct	15 Aug 10 j 20:41	3°♂32'32		min. Earth dist.	21 Aug 13 j 00:31	17°≈15'13	8.57338 AU
evening set	15 Nov 19 j 15:48	10°♂31'04			21 Sep 14 j 01:58	15°≈	
conjunction	15 Dec 06 j 05:13	12°♂27'13	0°56'30	direct	21 Oct 19 j 23:55	13°≈55'09	
minimum elong	15 Dec 06 j 05:14	12°♂27'13	0°56'30	evening set	21 Nov 24 j 01:32	15°≈	
max. Earth dist.	15 Dec 05 j 20:35	12°♂24'40	11.07988 AU		22 Jan 27 j 20:14	21°≈19'27	
morning rise	15 Dec 22 j 19:09	14°♂23'31		conjunction	22 Feb 13 j 20:31	23°≈25'43	-1°-41'-45
retrograde	16 Apr 02 j 03:37	21°♂25'27		minimum elong	22 Feb 13 j 20:28	23°≈25'42	1°41'46
opposition	16 Jun 12 j 00:50	18°♂07'15	0°53'15	max. Earth dist.	22 Feb 13 j 16:05	23°≈24'20	10.51049 AU
min. Earth dist.	16 Jun 12 j 08:18	18°♂05'53	9.05719 AU	morning rise	22 Mar 03 j 01:12	25°≈33'26	
direct	16 Aug 21 j 15:41	14°♂49'16			22 Apr 12 j 02:15	0°♂	
evening set	16 Nov 29 j 22:32	21°♂48'19		retrograde	22 Jun 17 j 04:07	3°♂25'02	
conjunction	16 Dec 16 j 12:57	23°♂45'21	0°30'22		22 Aug 25 j 16:43	30°≈	
minimum elong	16 Dec 16 j 12:58	23°♂45'21	0°30'22	opposition	22 Aug 26 j 01:36	29°≈58'16	-2°-18'-11
max. Earth dist.	16 Dec 16 j 04:36	23°♂42'53	11.02843 AU	min. Earth dist.	22 Aug 26 j 04:20	29°≈57'44	8.44822 AU
morning rise	17 Jan 02 j 04:32	25°♂42'47		direct	22 Nov 01 j 16:25	26°≈36'09	
	17 Feb 12 j 09:47	0°♄		evening set	23 Jan 04 j 04:59	0°♂	
retrograde	17 Apr 14 j 06:08	2°♄50'02			23 Feb 09 j 22:32	4°♂09'12	
	17 Jun 17 j 14:44	30°♂		conjunction	23 Feb 27 j 01:54	6°♂18'04	-2°00'-3
opposition	17 Jun 24 j 05:26	29°♂30'46	0°20'13	minimum elong	23 Feb 27 j 01:52	6°♂18'03	2°00'04
min. Earth dist.	17 Jun 24 j 12:25	29°♂29'28	8.99403 AU	max. Earth dist.	23 Feb 26 j 22:52	6°♂17'06	10.38558 AU
direct	17 Sep 02 j 10:14	26°♂12'41		morning rise	23 Mar 16 j 10:00	8°♂28'27	
	17 Nov 11 j 16:25	0°♄		retrograde	23 Jul 01 j 03:51	16°♂30'11	
evening set	17 Dec 11 j 08:42	3°♄13'49		opposition	23 Sep 08 j 13:56	13°♂02'00	-2°-37'-47
conjunction	17 Dec 28 j 00:28	5°♄12'06	0°02'46	min. Earth dist.	23 Sep 08 j 15:06	13°♂01'46	8.32606 AU
minimum elong	17 Dec 28 j 00:27	5°♄12'06	0°02'46	direct	23 Nov 14 j 16:49	9°♂38'40	
behind sun begin	17 Dec 27 j 17:29	5°♄10'03		evening set	24 Feb 23 j 11:38	17°♂20'57	
behind sun end	17 Dec 28 j 07:26	5°♄14'09		conjunction	24 Mar 11 j 18:37	19°♂32'31	-2°-12'-33
max. Earth dist.	17 Dec 27 j 16:23	5°♄09'43	10.95485 AU	minimum elong	24 Mar 11 j 18:35	19°♂32'30	2°12'33
morning rise	18 Jan 13 j 18:06	7°♄11'01		max. Earth dist.	24 Mar 11 j 16:58	19°♂31'59	10.26688 AU
desc. node	18 Feb 02 j 04:01	9°♄21'56		morning rise	24 Mar 29 j 06:31	21°♂45'39	
retrograde	18 Apr 26 j 15:59	14°♄25'01		retrograde	24 Jul 14 j 10:39	29°♂56'34	
opposition	18 Jul 06 j 13:37	11°♄04'28	0°-14'-8	opposition	24 Sep 21 j 08:27	26°♂27'13	-2°-49'-27
min. Earth dist.	18 Jul 06 j 20:14	11°♄03'14	8.91028 AU	min. Earth dist.	24 Sep 21 j 08:27	26°♂27'13	8.21326 AU
direct	18 Sep 14 j 07:33	7°♄46'01		direct	24 Nov 27 j 01:21	23°♂02'35	
evening set	18 Dec 23 j 00:07	14°♄50'47			25 Mar 01 j 06:28	0°♀	
conjunction	19 Jan 08 j 17:21	16°♄50'37	0°-25'-29	evening set	25 Mar 08 j 11:47	0°♀54'07	
minimum elong	19 Jan 08 j 17:21	16°♄50'37	0°25'31	conjunction	25 Mar 25 j 22:55	3°♀08'25	-2°-18'-2
max. Earth dist.	19 Jan 08 j 08:48	16°♄48'03	10.86216 AU	minimum elong	25 Mar 25 j 22:55	3°♀08'25	2°18'02
morning rise	19 Jan 25 j 13:28	18°♄51'22		max. Earth dist.	25 Mar 25 j 22:58	3°♀08'26	10.16084 AU
retrograde	19 May 09 j 07:16	26°♄13'25		morning rise	25 Apr 12 j 14:50	5°♀24'14	
opposition	19 Jul 19 j 02:14	22°♄51'24	0°-48'-39	retrograde	25 Jul 28 j 23:25	13°♀42'36	
min. Earth dist.	19 Jul 19 j 08:58	22°♄50'08	8.80938 AU	opposition	25 Oct 05 j 08:16	10°♀12'25	-2°-51'-47
direct	19 Sep 26 j 06:53	19°♄32'19		min. Earth dist.	25 Oct 05 j 07:05	10°♀12'40	8.11616 AU
evening set	20 Jan 03 j 22:13	26°♄42'15		direct	25 Dec 10 j 18:08	6°♀46'31	
				evening set	26 Mar 22 j 22:06	14°♀46'42	



conjunction	26 Apr 09 j 13:46	17° $\Upsilon$ 03'35	-2°-15'-40	behind sun begin	32 Jul 07 j 11:51	12° $\Theta$ 37'33	
minimum elong	26 Apr 09 j 13:47	17° $\Upsilon$ 03'36	2°15'40	behind sun end	32 Jul 07 j 16:40	12° $\Theta$ 39'05	
max. Earth dist.	26 Apr 09 j 16:04	17° $\Upsilon$ 04'21	10.07376 AU	max. Earth dist.	32 Jul 07 j 23:06	12° $\Theta$ 41'08	10.14880 AU
morning rise	26 Apr 27 j 09:39	19° $\Upsilon$ 21'50		morning rise	32 Jul 25 j 14:22	14° $\Theta$ 56'11	
retrograde	26 Aug 12 j 15:47	27° $\Upsilon$ 45'17		retrograde	32 Nov 05 j 03:01	22° $\Theta$ 52'01	
opposition	26 Oct 19 j 12:37	24° $\Upsilon$ 14'38	-2°-43'-59	opposition	33 Jan 10 j 16:41	19° $\Theta$ 26'33	0°38'39
min. Earth dist.	26 Oct 19 j 09:50	24° $\Upsilon$ 15'13	8.04075 AU	min. Earth dist.	33 Jan 10 j 10:08	19° $\Theta$ 27'53	8.19854 AU
direct	26 Dec 24 j 19:04	20° $\Upsilon$ 47'36		direct	33 Mar 19 j 20:53	15° $\Theta$ 57'27	
evening set	27 Apr 06 j 16:58	28° $\Upsilon$ 55'07		evening set	33 Jul 04 j 03:03	24° $\Theta$ 04'05	
	27 Apr 15 j 01:51	0° $\Theta$					
conjunction	27 Apr 24 j 13:12	1° $\Theta$ 14'16	-2°-5'-9	conjunction	33 Jul 22 j 02:29	26° $\Theta$ 20'16	0°47'03
minimum elong	27 Apr 24 j 13:15	1° $\Theta$ 14'17	2°05'09	minimum elong	33 Jul 22 j 02:27	26° $\Theta$ 20'15	0°47'04
max. Earth dist.	27 Apr 24 j 18:15	1° $\Theta$ 15'56	10.01127 AU	max. Earth dist.	33 Jul 22 j 10:08	26° $\Theta$ 22'41	10.25313 AU
morning rise	27 May 12 j 12:45	3° $\Theta$ 34'31		morning rise	33 Aug 08 j 22:12	28° $\Theta$ 35'13	
retrograde	27 Aug 27 j 09:59	12° $\Theta$ 00'10		retrograde	33 Aug 20 j 11:57	0° $\Omega$	
opposition	27 Nov 02 j 19:54	8° $\Theta$ 29'28	-2°-26'-1	opposition	33 Nov 18 j 12:37	6° $\Omega$ 20'57	
min. Earth dist.	27 Nov 02 j 15:10	8° $\Theta$ 30'26	7.99207 AU	min. Earth dist.	34 Jan 24 j 07:32	2° $\Omega$ 57'01	1°16'34
direct	28 Jan 08 j 02:21	5° $\Theta$ 01'27		direct	34 Jan 24 j 01:28	2° $\Omega$ 58'14	8.31026 AU
evening set	28 Apr 20 j 18:44	13° $\Theta$ 14'31		evening set	34 Mar 09 j 10:16	30° $\mathcal{R}\Theta$	
	28 May 04 j 07:15	15° $\Theta$			34 Apr 03 j 02:08	29° $\Theta$ 28'32	
					34 Apr 27 j 16:07	0° $\Omega$	
					34 Jul 18 j 09:07	7° $\Omega$ 28'15	
conjunction	28 May 08 j 19:06	15° $\Theta$ 35'23	-1°-46'-49	conjunction	34 Aug 05 j 04:04	9° $\Omega$ 41'23	1°15'54
minimum elong	28 May 08 j 19:10	15° $\Theta$ 35'24	1°46'50	minimum elong	34 Aug 05 j 04:01	9° $\Omega$ 41'22	1°15'54
max. Earth dist.	28 May 09 j 02:27	15° $\Theta$ 37'47	9.97771 AU	max. Earth dist.	34 Aug 05 j 10:20	9° $\Omega$ 43'21	10.37005 AU
morning rise	28 May 26 j 21:36	17° $\Theta$ 56'57		morning rise	34 Aug 22 j 18:33	11° $\Omega$ 53'06	
retrograde	28 Sep 10 j 03:45	26° $\Theta$ 21'36		retrograde	34 Sep 18 j 12:58	15° $\Omega$	
opposition	28 Nov 16 j 04:19	22° $\Theta$ 51'18	-1°-58'-46	opposition	34 Dec 01 j 15:00	19° $\Omega$ 28'59	
min. Earth dist.	28 Nov 15 j 22:03	22° $\Theta$ 52'36	7.97359 AU	min. Earth dist.	35 Feb 06 j 16:00	16° $\Omega$ 06'31	1°49'22
direct	29 Jan 21 j 13:32	19° $\Theta$ 22'32		direct	35 Feb 06 j 10:51	16° $\Omega$ 07'32	8.43096 AU
evening set	29 May 06 j 00:35	27° $\Theta$ 38'57		evening set	35 Feb 20 j 21:24	15° $\mathcal{R}\Omega$	
					35 Apr 17 j 00:18	12° $\Omega$ 38'53	
conjunction	29 May 24 j 04:03	0° $\Pi$ 00'44	-1°-21'-45	conjunction	35 Jun 09 j 22:28	15° $\Omega$	
minimum elong	29 May 24 j 04:07	0° $\Pi$ 00'45	1°21'46	minimum elong	35 Aug 01 j 04:36	20° $\Omega$ 30'57	
max. Earth dist.	29 May 24 j 01:50	0° $\Pi$		max. Earth dist.			
morning rise	29 May 24 j 13:02	0° $\Pi$ 03'40	9.97553 AU	morning rise	35 Aug 18 j 18:31	22° $\Omega$ 40'56	1°40'07
retrograde	29 Jun 11 j 08:20	2° $\Pi$ 22'47		retrograde	35 Aug 18 j 18:28	22° $\Omega$ 40'55	1°40'07
opposition	29 Sep 24 j 19:29	10° $\Pi$ 43'25		opposition	35 Aug 18 j 23:20	22° $\Omega$ 42'25	10.49209 AU
min. Earth dist.	29 Nov 30 j 12:20	7° $\Pi$ 13'56	-1°-24'-2	min. Earth dist.	35 Sep 05 j 03:26	24° $\Omega$ 49'23	
direct	29 Nov 30 j 05:06	7° $\Pi$ 15'26	7.98682 AU	direct	35 Oct 23 j 22:32	0° $\mathcal{M}$	
evening set	30 Feb 05 j 03:12	3° $\Pi$ 44'39		evening set	35 Dec 14 j 09:10	2° $\mathcal{M}$ 16'09	
	30 May 21 j 07:17	12° $\Pi$ 01'59			36 Feb 05 j 17:18	30° $\mathcal{R}\Omega$	
conjunction	30 Jun 08 j 12:19	14° $\Pi$ 23'44	0°-51'-40	conjunction	36 Feb 19 j 18:27	28° $\Omega$ 55'07	2°15'43
minimum elong	30 Jun 08 j 12:21	14° $\Pi$ 23'45	0°51'41	minimum elong	36 Feb 19 j 15:02	28° $\Omega$ 55'48	8.55353 AU
max. Earth dist.	30 Jun 08 j 22:14	14° $\Pi$ 26'58	10.00498 AU	max. Earth dist.	36 Apr 29 j 15:30	25° $\Omega$ 28'32	
morning rise	30 Jun 26 j 16:49	16° $\Pi$ 45'18		morning rise	36 Jul 16 j 05:11	0° $\mathcal{M}$	
retrograde	30 Oct 09 j 06:14	24° $\Pi$ 59'22		retrograde	36 Aug 13 j 13:25	3° $\mathcal{M}$ 12'41	
opposition	30 Dec 14 j 18:06	21° $\Pi$ 31'01	0°-44'-18	opposition			
min. Earth dist.	30 Dec 14 j 10:39	21° $\Pi$ 32'33	8.03103 AU	min. Earth dist.	36 Aug 30 j 22:01	5° $\mathcal{M}$ 19'32	1°58'51
direct	31 Feb 19 j 18:42	18° $\Pi$ 01'31		direct	36 Aug 30 j 21:59	5° $\mathcal{M}$ 19'31	1°58'50
evening set	31 Jun 05 j 11:53	26° $\Pi$ 17'22		evening set	36 Aug 31 j 00:57	5° $\mathcal{M}$ 20'25	10.61305 AU
					36 Sep 17 j 01:32	7° $\mathcal{M}$ 24'53	
conjunction	31 Jun 23 j 16:44	28° $\Pi$ 38'05	0°-18'-42	conjunction	36 Dec 25 j 20:20	14° $\mathcal{M}$ 43'33	
minimum elong	31 Jun 23 j 16:45	28° $\Pi$ 38'06	0°18'43	minimum elong	37 Mar 03 j 15:13	11° $\mathcal{M}$ 23'49	2°34'51
max. Earth dist.	31 Jun 24 j 02:34	28° $\Pi$ 41'16	10.06412 AU	max. Earth dist.	37 Mar 03 j 13:53	11° $\mathcal{M}$ 24'04	8.67264 AU
morning rise	31 Jul 04 j 05:52	0° $\Theta$		morning rise	37 May 12 j 23:33	7° $\mathcal{M}$ 58'22	
retrograde	31 Jul 11 j 19:50	0° $\Theta$ 58'13		retrograde	37 Aug 26 j 11:40	15° $\mathcal{M}$ 34'31	
opposition	31 Oct 23 j 09:07	9° $\Theta$ 03'45		opposition			
min. Earth dist.	31 Dec 28 j 19:53	5° $\Theta$ 36'47	0°-2'-28	min. Earth dist.	37 Sep 12 j 15:12	17° $\mathcal{M}$ 38'29	2°11'36
asc. node	31 Dec 28 j 12:55	5° $\Theta$ 38'13	8.10329 AU	asc. node	37 Sep 12 j 15:10	17° $\mathcal{M}$ 38'29	2°11'36
direct	32 Jan 20 j 06:00	3° $\Theta$ 51'29		direct	37 Sep 12 j 15:39	17° $\mathcal{M}$ 38'37	10.72827 AU
evening set	32 Mar 05 j 09:13	2° $\Theta$ 07'20		evening set	37 Sep 29 j 13:58	19° $\mathcal{M}$ 41'03	
	32 Jun 19 j 11:22	10° $\Theta$ 19'31			38 Jan 07 j 01:00	26° $\mathcal{M}$ 52'41	
conjunction	32 Jul 07 j 14:17	12° $\Theta$ 38'19	0°14'57	conjunction	38 Mar 16 j 06:44	23° $\mathcal{M}$ 34'00	2°46'29
minimum elong	32 Jul 07 j 14:16	12° $\Theta$ 38'19	0°14'58	minimum elong	38 Mar 16 j 07:09	23° $\mathcal{M}$ 33'55	8.78375 AU
				direct	38 May 26 j 00:06	20° $\mathcal{M}$ 09'43	



evening set	38 Sep 07 j 23:48	27° $\cap$ 38'04		evening set	44 Sep 08 j 14:56	0° $\bowtie$	
					44 Nov 14 j 08:02	6° $\bowtie$ 03'01	
conjunction	38 Sep 24 j 22:55	29° $\cap$ 39'32	2°18'15	conjunction	44 Nov 30 j 21:30	7° $\bowtie$ 59'08	1°06'51
minimum elong	38 Sep 24 j 22:54	29° $\cap$ 39'31	2°18'15	minimum elong	44 Nov 30 j 21:32	7° $\bowtie$ 59'08	1°06'50
max. Earth dist.	38 Sep 24 j 21:09	29° $\cap$ 39'00	10.83336 AU	max. Earth dist.	44 Nov 30 j 14:51	7° $\bowtie$ 57'10	11.07330 AU
	38 Sep 27 j 19:03	0° $\underline{\Delta}$		morning rise	44 Dec 17 j 10:46	9° $\bowtie$ 55'17	
morning rise	38 Oct 11 j 17:48	1° $\underline{\Delta}$ 39'43		retrograde	45 Mar 28 j 12:50	16° $\bowtie$ 55'59	
retrograde	39 Jan 18 j 23:36	8° $\underline{\Delta}$ 45'32		opposition	45 Jun 07 j 08:06	13° $\bowtie$ 37'31	1°06'30
opposition	39 Mar 28 j 17:28	5° $\underline{\Delta}$ 27'37	2°50'39	min. Earth dist.	45 Jun 07 j 13:58	13° $\bowtie$ 36'26	9.05716 AU
min. Earth dist.	39 Mar 28 j 18:47	5° $\underline{\Delta}$ 27'22	8.88238 AU	direct	45 Aug 17 j 02:38	10° $\bowtie$ 18'54	
direct	39 Jun 07 j 19:18	2° $\underline{\Delta}$ 04'30		evening set	45 Nov 25 j 14:08	17° $\bowtie$ 18'03	
evening set	39 Sep 20 j 03:02	9° $\underline{\Delta}$ 25'32					
conjunction	39 Oct 06 j 22:37	11° $\underline{\Delta}$ 24'54	2°18'54	conjunction	45 Dec 12 j 04:10	19° $\bowtie$ 14'50	0°41'35
minimum elong	39 Oct 06 j 22:37	11° $\underline{\Delta}$ 24'54	2°18'54	minimum elong	45 Dec 12 j 04:12	19° $\bowtie$ 14'51	0°41'35
max. Earth dist.	39 Oct 06 j 19:51	11° $\underline{\Delta}$ 24'05	10.92415 AU	max. Earth dist.	45 Dec 11 j 20:31	19° $\bowtie$ 12'35	11.03487 AU
morning rise	39 Oct 23 j 14:19	13° $\underline{\Delta}$ 23'11		morning rise	45 Dec 28 j 19:04	21° $\bowtie$ 11'56	
retrograde	40 Jan 30 j 20:42	20° $\underline{\Delta}$ 24'29		retrograde	46 Apr 09 j 12:35	28° $\bowtie$ 17'08	
opposition	40 Apr 09 j 00:13	17° $\underline{\Delta}$ 07'05	2°47'40	opposition	46 Jun 19 j 11:33	24° $\bowtie$ 57'49	0°34'20
min. Earth dist.	40 Apr 09 j 02:23	17° $\underline{\Delta}$ 06'41	8.96472 AU	min. Earth dist.	46 Jun 19 j 18:15	24° $\bowtie$ 56'35	9.00738 AU
direct	40 Jun 19 j 07:36	13° $\underline{\Delta}$ 45'04		direct	46 Aug 28 j 19:59	21° $\bowtie$ 39'19	
evening set	40 Sep 30 j 22:37	20° $\underline{\Delta}$ 59'29		evening set	46 Dec 06 j 22:48	28° $\bowtie$ 39'50	
					46 Dec 18 j 07:11	0° $\overline{\text{C}}$	
conjunction	40 Oct 17 j 15:28	22° $\underline{\Delta}$ 57'16	2°13'51	conjunction	46 Dec 23 j 13:52	0° $\overline{\text{C}}$ 37'40	0°14'27
minimum elong	40 Oct 17 j 15:29	22° $\underline{\Delta}$ 57'16	2°13'52	minimum elong	46 Dec 23 j 13:52	0° $\overline{\text{C}}$ 37'40	0°14'28
max. Earth dist.	40 Oct 17 j 12:01	22° $\underline{\Delta}$ 56'15	10.99722 AU	behind sun begin	46 Dec 23 j 10:35	0° $\overline{\text{C}}$ 36'42	
morning rise	40 Nov 03 j 04:55	24° $\underline{\Delta}$ 54'07		behind sun end	46 Dec 23 j 17:10	0° $\overline{\text{C}}$ 38'38	
	40 Dec 24 j 12:57	0° $\overline{\text{M}}$		max. Earth dist.	46 Dec 23 j 05:45	0° $\overline{\text{C}}$ 35'16	10.97483 AU
retrograde	41 Feb 10 j 13:56	1° $\overline{\text{M}}$ 52'17		morning rise	47 Jan 09 j 06:47	2° $\overline{\text{C}}$ 36'03	
	41 Apr 01 j 11:31	30° $\overline{\text{R}}$ $\underline{\Delta}$		retrograde	47 Apr 21 j 18:44	9° $\overline{\text{C}}$ 47'17	
opposition	41 Apr 21 j 04:06	28° $\underline{\Delta}$ 35'09	2°38'03	opposition	47 Jul 01 j 18:13	6° $\overline{\text{C}}$ 26'57	0°00'22
min. Earth dist.	41 Apr 21 j 07:40	28° $\underline{\Delta}$ 34'29	9.02788 AU	min. Earth dist.	47 Jul 02 j 00:52	6° $\overline{\text{C}}$ 25'43	8.93697 AU
direct	41 Jul 01 j 12:11	25° $\underline{\Delta}$ 14'07		desc. node	47 Jul 05 j 17:33	6° $\overline{\text{C}}$ 09'14	
	41 Sep 20 j 22:10	0° $\overline{\text{M}}$		direct	47 Sep 09 j 17:17	3° $\overline{\text{C}}$ 08'21	
evening set	41 Oct 12 j 11:56	2° $\overline{\text{M}}$ 22'53		evening set	47 Dec 18 j 11:42	10° $\overline{\text{C}}$ 11'44	
conjunction	41 Oct 29 j 02:47	4° $\overline{\text{M}}$ 19'32	2°03'33	conjunction	48 Jan 04 j 04:18	12° $\overline{\text{C}}$ 10'58	0°-13'-41
minimum elong	41 Oct 29 j 02:49	4° $\overline{\text{M}}$ 19'33	2°03'33	minimum elong	48 Jan 04 j 04:17	12° $\overline{\text{C}}$ 10'58	0°13'41
max. Earth dist.	41 Oct 28 j 21:47	4° $\overline{\text{M}}$ 18'04	11.05008 AU	behind sun begin	48 Jan 04 j 00:23	12° $\overline{\text{C}}$ 09'49	
morning rise	41 Nov 14 j 15:06	6° $\overline{\text{M}}$ 15'31		behind sun end	48 Jan 04 j 08:11	12° $\overline{\text{C}}$ 12'07	
retrograde	42 Feb 22 j 05:28	13° $\overline{\text{M}}$ 12'00		max. Earth dist.	48 Jan 03 j 21:13	12° $\overline{\text{C}}$ 08'51	10.89517 AU
opposition	42 May 03 j 05:49	9° $\overline{\text{M}}$ 54'53	2°22'24	morning rise	48 Jan 20 j 23:22	14° $\overline{\text{C}}$ 10'59	
min. Earth dist.	42 May 03 j 11:03	9° $\overline{\text{M}}$ 53'54	9.06974 AU	retrograde	48 May 03 j 07:26	21° $\overline{\text{C}}$ 29'42	
direct	42 Jul 13 j 14:26	6° $\overline{\text{M}}$ 34'39		opposition	48 Jul 13 j 05:00	18° $\overline{\text{C}}$ 08'08	0°-34'-14
evening set	42 Oct 23 j 20:53	13° $\overline{\text{M}}$ 38'59		min. Earth dist.	48 Jul 13 j 10:32	18° $\overline{\text{C}}$ 07'06	8.84850 AU
	42 Nov 04 j 11:24	15° $\overline{\text{M}}$		direct	48 Sep 20 j 15:49	14° $\overline{\text{C}}$ 49'15	
conjunction	42 Nov 09 j 10:29	15° $\overline{\text{M}}$ 35'00	1°48'32	evening set	48 Dec 29 j 06:51	21° $\overline{\text{C}}$ 57'03	
minimum elong	42 Nov 09 j 10:31	15° $\overline{\text{M}}$ 35'00	1°48'31				
max. Earth dist.	42 Nov 09 j 03:47	15° $\overline{\text{M}}$ 33'02	11.08098 AU	conjunction	49 Jan 15 j 01:16	23° $\overline{\text{C}}$ 57'59	0°-41'-39
morning rise	42 Nov 25 j 22:33	17° $\overline{\text{M}}$ 30'34		minimum elong	49 Jan 15 j 01:14	23° $\overline{\text{C}}$ 57'58	0°41'40
retrograde	43 Mar 05 j 21:11	24° $\overline{\text{M}}$ 26'52		max. Earth dist.	49 Jan 14 j 19:23	23° $\overline{\text{C}}$ 56'12	10.79886 AU
opposition	43 May 15 j 06:09	21° $\overline{\text{M}}$ 09'31	2°01'24	morning rise	49 Jan 31 j 22:46	25° $\overline{\text{C}}$ 59'55	
min. Earth dist.	43 May 15 j 11:59	21° $\overline{\text{M}}$ 08'27	9.08888 AU		49 Mar 09 j 19:41	0° $\approx$	
direct	43 Jul 25 j 12:39	17° $\overline{\text{M}}$ 50'00		retrograde	49 May 16 j 03:38	3° $\approx$ 27'18	
evening set	43 Nov 04 j 03:00	24° $\overline{\text{M}}$ 51'11		opposition	49 Jul 25 j 20:36	0° $\approx$ 04'24	-1°-8'-10
				min. Earth dist.	49 Jul 26 j 00:56	0° $\approx$ 03'35	8.74540 AU
conjunction	43 Nov 20 j 16:15	26° $\overline{\text{M}}$ 47'01	1°29'25		49 Jul 26 j 19:51	30° $\overline{\text{R}}$ $\overline{\text{C}}$	
minimum elong	43 Nov 20 j 16:17	26° $\overline{\text{M}}$ 47'02	1°29'24	direct	49 Oct 02 j 18:29	26° $\overline{\text{C}}$ 45'00	
max. Earth dist.	43 Nov 20 j 09:27	26° $\overline{\text{M}}$ 45'01	11.08883 AU		49 Dec 05 j 01:22	0° $\approx$	
morning rise	43 Dec 07 j 04:37	28° $\overline{\text{M}}$ 42'40		evening set	50 Jan 10 j 09:42	3° $\approx$ 58'40	
	43 Dec 18 j 14:57	0° $\bowtie$					
retrograde	44 Mar 16 j 15:06	5° $\bowtie$ 40'23		conjunction	50 Jan 27 j 06:09	6° $\approx$ 01'36	-1°-8'-23
opposition	44 May 26 j 06:35	2° $\bowtie$ 22'34	1°35'50	minimum elong	50 Jan 27 j 06:07	6° $\approx$ 01'35	1°08'25
min. Earth dist.	44 May 26 j 12:16	2° $\bowtie$ 21'32	9.08464 AU	max. Earth dist.	50 Jan 27 j 00:38	5° $\approx$ 59'55	10.68979 AU
	44 Jul 01 j 08:20	30° $\overline{\text{R}}$ $\overline{\text{M}}$		morning rise	50 Feb 13 j 06:28	8° $\approx$ 05'44	
direct	44 Aug 05 j 08:50	29° $\overline{\text{M}}$ 03'36			50 Apr 29 j 21:37	15° $\approx$	



retrograde	50 May 29 j 08:44	15° <del>42</del> '40		min. Earth dist.	56 Oct 27 j 00:21	2° <del>42</del> '56	8.02750 AU
	50 Jun 28 j 01:04	15° <del>42</del> '40			56 Dec 03 j 22:29	30° <del>42</del> '56	
opposition	50 Aug 07 j 17:57	12° <del>42</del> '18'25	-1°-39'-55	direct	57 Jan 01 j 08:59	29° <del>42</del> '56	
min. Earth dist.	50 Aug 07 j 21:38	12° <del>42</del> '17'43	8.63186 AU		57 Jan 29 j 15:15	0° <del>42</del> '56	
direct	50 Oct 15 j 01:50	8° <del>42</del> '58'16		evening set	57 Apr 14 j 18:22	7° <del>42</del> '56	
	51 Jan 11 j 19:27	15° <del>42</del> '58					
evening set	51 Jan 22 j 21:30	16° <del>42</del> '58'06		conjunction	57 May 02 j 16:45	9° <del>42</del> '58'11	-1°-55'-19
				minimum elong	57 May 02 j 16:49	9° <del>42</del> '58'12	1°55'19
conjunction	51 Feb 08 j 20:19	18° <del>42</del> '24'15	-1°-32'-35	max. Earth dist.	57 May 02 j 21:22	9° <del>42</del> '58'41	10.00486 AU
minimum elong	51 Feb 08 j 20:16	18° <del>42</del> '24'14	1°32'37	morning rise	57 May 20 j 18:02	12° <del>42</del> '58'02	
max. Earth dist.	51 Feb 08 j 15:28	18° <del>42</del> '22'45	10.57255 AU		57 Jun 13 j 08:25	15° <del>42</del> '58	
morning rise	51 Feb 25 j 23:41	20° <del>42</del> '30'48		retrograde	57 Sep 04 j 07:57	20° <del>42</del> '58'40	
retrograde	51 Jun 11 j 20:10	28° <del>42</del> '17'48		opposition	57 Nov 10 j 11:30	17° <del>42</del> '58'00'35	-2°-11'-9
opposition	51 Aug 20 j 21:24	24° <del>42</del> '52'11	-2°-7'-51	min. Earth dist.	57 Nov 10 j 07:16	17° <del>42</del> '58'01'28	7.99239 AU
min. Earth dist.	51 Aug 21 j 00:23	24° <del>42</del> '51'37	8.51287 AU		57 Dec 06 j 09:09	15° <del>42</del> '58	
direct	51 Oct 27 j 16:04	21° <del>42</del> '31'06		direct	58 Jan 15 j 18:47	13° <del>42</del> '58'32'28	
evening set	52 Feb 04 j 19:18	29° <del>42</del> '00'08			58 Feb 24 j 16:51	15° <del>42</del> '58	
	52 Feb 12 j 20:50	0° <del>42</del> '58		evening set	58 Apr 29 j 22:11	21° <del>42</del> '58'46'56	
conjunction	52 Feb 21 j 21:05	1° <del>42</del> '07'42	-1°-52'-54	conjunction	58 May 18 j 00:11	24° <del>42</del> '58'08'11	-1°-33'-1
minimum elong	52 Feb 21 j 21:02	1° <del>42</del> '07'41	1°52'55	minimum elong	58 May 18 j 00:14	24° <del>42</del> '58'08'13	1°33'01
max. Earth dist.	52 Feb 21 j 17:55	1° <del>42</del> '06'43	10.45245 AU	max. Earth dist.	58 May 18 j 06:18	24° <del>42</del> '58'10'12	9.98541 AU
morning rise	52 Mar 10 j 03:43	3° <del>42</del> '16'48		morning rise	58 Jun 05 j 03:52	26° <del>42</del> '58'29'57	
retrograde	52 Jun 24 j 15:12	11° <del>42</del> '13'53			58 Jul 04 j 00:31	0° <del>42</del> '58	
opposition	52 Sep 02 j 07:02	7° <del>42</del> '46'55	-2°-30'-13	retrograde	58 Sep 18 j 23:26	4° <del>42</del> '58'51'54	
min. Earth dist.	52 Sep 02 j 08:50	7° <del>42</del> '46'34	8.39387 AU	opposition	58 Nov 24 j 19:27	1° <del>42</del> '58'22'15	-1°-39'-27
direct	52 Nov 08 j 14:52	4° <del>42</del> '24'44		min. Earth dist.	58 Nov 24 j 14:10	1° <del>42</del> '58'23'21	7.98816 AU
evening set	53 Feb 17 j 03:44	12° <del>42</del> '02'34			58 Dec 11 j 18:43	30° <del>42</del> '58	
				direct	59 Jan 30 j 08:09	27° <del>42</del> '58'53'18	
conjunction	53 Mar 06 j 09:04	14° <del>42</del> '12'46	-2°-7'-56		59 Mar 20 j 00:18	0° <del>42</del> '58	
minimum elong	53 Mar 06 j 09:02	14° <del>42</del> '12'45	2°07'57	evening set	59 May 15 j 04:03	6° <del>42</del> '58'09'46	
max. Earth dist.	53 Mar 06 j 08:09	14° <del>42</del> '12'28	10.33496 AU				
morning rise	53 Mar 23 j 19:11	16° <del>42</del> '24'30		conjunction	59 Jun 02 j 08:27	8° <del>42</del> '58'31'27	-1°-4'-56
retrograde	53 Jul 08 j 18:33	24° <del>42</del> '30'58		minimum elong	59 Jun 02 j 08:31	8° <del>42</del> '58'31'28	1°04'56
opposition	53 Sep 15 j 22:41	21° <del>42</del> '02'46	-2°-45'-20	max. Earth dist.	59 Jun 02 j 15:57	8° <del>42</del> '58'33'54	9.99738 AU
min. Earth dist.	53 Sep 15 j 22:46	21° <del>42</del> '02'45	8.28018 AU	morning rise	59 Jun 20 j 13:10	10° <del>42</del> '58'53'11	
direct	53 Nov 21 j 20:27	17° <del>42</del> '39'24		retrograde	59 Oct 03 j 10:56	19° <del>42</del> '58'09'41	
evening set	54 Mar 02 j 23:00	25° <del>42</del> '26'14		opposition	59 Dec 09 j 01:44	15° <del>42</del> '58'40'48	-1°-1'-40
				min. Earth dist.	59 Dec 08 j 19:29	15° <del>42</del> '58'42'06	8.01508 AU
conjunction	54 Mar 20 j 08:16	27° <del>42</del> '39'06	-2°-16'-27	direct	60 Feb 13 j 23:42	12° <del>42</del> '58'11'18	
minimum elong	54 Mar 20 j 08:15	27° <del>42</del> '39'06	2°16'28	evening set	60 May 29 j 09:16	20° <del>42</del> '58'27'22	
max. Earth dist.	54 Mar 20 j 09:03	27° <del>42</del> '39'21	10.22548 AU				
morning rise	54 Apr 06 j 22:07	29° <del>42</del> '53'29		conjunction	60 Jun 16 j 14:26	22° <del>42</del> '58'48'30	0°-33'-1
	54 Apr 07 j 18:54	0° <del>42</del> '58		minimum elong	60 Jun 16 j 14:28	22° <del>42</del> '58'48'31	0°33'01
retrograde	54 Jul 23 j 05:36	8° <del>42</del> '58'08'02		max. Earth dist.	60 Jun 16 j 22:50	22° <del>42</del> '58'51'14	10.03971 AU
opposition	54 Sep 29 j 19:52	4° <del>42</del> '58'38'52	-2°-51'-40	morning rise	60 Jul 04 j 18:25	25° <del>42</del> '58'09'15	
min. Earth dist.	54 Sep 29 j 18:28	4° <del>42</del> '58'39'09	8.17708 AU		60 Aug 15 j 19:23	0° <del>42</del> '58	
direct	54 Dec 05 j 08:07	1° <del>42</del> '58'14'14		retrograde	60 Oct 16 j 16:00	3° <del>42</del> '58'18'05	
evening set	55 Mar 17 j 04:38	9° <del>42</del> '58'09'54			60 Dec 20 j 05:29	30° <del>42</del> '58	
				opposition	60 Dec 22 j 04:38	29° <del>42</del> '58'50'17	0°-20'-30
conjunction	55 Apr 03 j 18:13	11° <del>42</del> '58'25'25	-2°-17'-27	min. Earth dist.	60 Dec 21 j 21:42	29° <del>42</del> '58'51'42	8.07114 AU
minimum elong	55 Apr 03 j 18:14	11° <del>42</del> '58'25'25	2°17'28	direct	61 Feb 27 j 14:16	26° <del>42</del> '58'20'31	
max. Earth dist.	55 Apr 03 j 20:21	11° <del>42</del> '58'26'06	10.12974 AU		61 May 04 j 22:24	0° <del>42</del> '58	
morning rise	55 Apr 21 j 12:04	13° <del>42</del> '58'42'21		evening set	61 Jun 13 j 10:34	4° <del>42</del> '58'33'57	
retrograde	55 Aug 06 j 21:02	22° <del>42</del> '58'03'04		asc. node	61 Jun 25 j 21:22	6° <del>42</del> '58'09'21	
opposition	55 Oct 13 j 22:01	18° <del>42</del> '58'33'14	-2°-48'-12				
min. Earth dist.	55 Oct 13 j 19:23	18° <del>42</del> '58'33'47	8.09072 AU	conjunction	61 Jul 01 j 14:39	6° <del>42</del> '58'53'36	0°00'31
direct	55 Dec 19 j 04:49	15° <del>42</del> '58'07'21		minimum elong	61 Jul 01 j 14:40	6° <del>42</del> '58'53'36	0°00'32
evening set	56 Mar 30 j 19:36	23° <del>42</del> '58'11'00		behind sun begin	61 Jul 01 j 07:20	6° <del>42</del> '58'51'16	
				behind sun end	61 Jul 01 j 21:59	6° <del>42</del> '58'55'57	
conjunction	56 Apr 17 j 13:43	25° <del>42</del> '58'28'57	-2°-10'-23	max. Earth dist.	61 Jul 01 j 23:32	6° <del>42</del> '58'56'27	10.10929 AU
minimum elong	56 Apr 17 j 13:46	25° <del>42</del> '58'28'58	2°10'23	morning rise	61 Jul 19 j 16:10	9° <del>42</del> '58'12'27	
max. Earth dist.	56 Apr 17 j 17:03	25° <del>42</del> '58'30'02	10.05426 AU	retrograde	61 Oct 30 j 13:51	17° <del>42</del> '58'12'12	
morning rise	56 May 05 j 11:34	27° <del>42</del> '58'48'07		opposition	62 Jan 05 j 03:08	13° <del>42</del> '58'45'41	0°21'08
	56 May 23 j 05:04	0° <del>42</del> '58		min. Earth dist.	62 Jan 04 j 20:18	13° <del>42</del> '58'47'05	8.15248 AU
retrograde	56 Aug 20 j 14:28	6° <del>42</del> '58'12'21		direct	62 Mar 14 j 01:40	10° <del>42</del> '58'16'01	
opposition	56 Oct 27 j 03:49	2° <del>42</del> '58'42'13	-2°-34'-32	evening set	62 Jun 28 j 05:03	18° <del>42</del> '58'24'48	



conjunction	62 Jul 16 j 06:22	20° <del>5</del> 42'11	0°33'27	conjunction	68 Oct 01 j 01:51	6° <del>5</del> 29'33	2°19'17
minimum elong	62 Jul 16 j 06:20	20° <del>5</del> 42'11	0°33'27	minimum elong	68 Oct 01 j 01:50	6° <del>5</del> 29'33	2°19'17
max. Earth dist.	62 Jul 16 j 14:49	20° <del>5</del> 44'53	10.20141 AU	max. Earth dist.	68 Oct 01 j 01:03	6° <del>5</del> 29'19	10.88961 AU
morning rise	62 Aug 03 j 04:02	22° <del>5</del> 58'26		morning rise	68 Oct 17 j 18:46	8° <del>5</del> 28'32	
	62 Oct 14 j 11:33	0° <del>0</del>		retrograde	69 Jan 25 j 00:28	15° <del>5</del> 31'16	
retrograde	62 Nov 13 j 03:55	0° <del>0</del> 48'24		opposition	69 Apr 03 j 23:44	12° <del>5</del> 13'40	2°49'45
	62 Dec 13 j 01:36	30° <del>5</del> 23'18		min. Earth dist.	69 Apr 04 j 01:26	12° <del>5</del> 13'21	8.93620 AU
opposition	63 Jan 18 j 20:09	27° <del>5</del> 23'18	1°00'39	direct	69 Jun 14 j 04:06	8° <del>5</del> 51'13	
min. Earth dist.	63 Jan 18 j 14:14	27° <del>5</del> 24'30	8.25379 AU	evening set	69 Sep 26 j 03:13	16° <del>5</del> 08'05	
direct	63 Mar 28 j 07:54	23° <del>5</del> 54'01					
	63 Jun 26 j 11:07	0° <del>0</del>		conjunction	69 Oct 12 j 21:03	18° <del>5</del> 06'25	2°16'41
evening set	63 Jul 12 j 15:03	1° <del>0</del> 56'39		minimum elong	69 Oct 12 j 21:04	18° <del>5</del> 06'25	2°16'42
				max. Earth dist.	69 Oct 12 j 18:01	18° <del>5</del> 05'31	10.97506 AU
conjunction	63 Jul 30 j 12:12	4° <del>0</del> 11'12	1°03'51	morning rise	69 Oct 29 j 11:31	20° <del>5</del> 03'45	
minimum elong	63 Jul 30 j 12:10	4° <del>0</del> 11'11	1°03'51	retrograde	70 Feb 05 j 17:29	27° <del>5</del> 02'42	
max. Earth dist.	63 Jul 30 j 19:11	4° <del>0</del> 13'25	10.31023 AU	opposition	70 Apr 16 j 04:17	23° <del>5</del> 45'41	2°42'58
morning rise	63 Aug 17 j 05:03	6° <del>0</del> 24'24		min. Earth dist.	70 Apr 16 j 06:58	23° <del>5</del> 45'11	9.01234 AU
retrograde	63 Nov 26 j 09:14	14° <del>0</del> 04'26		direct	70 Jun 26 j 11:42	20° <del>5</del> 24'28	
opposition	64 Feb 01 j 06:59	10° <del>0</del> 40'50	1°35'49	evening set	70 Oct 07 j 18:51	27° <del>5</del> 35'17	
min. Earth dist.	64 Feb 01 j 02:21	10° <del>0</del> 41'45	8.36889 AU				
direct	64 Apr 10 j 09:12	7° <del>0</del> 12'14		conjunction	70 Oct 24 j 10:27	29° <del>5</del> 32'16	2°08'39
	64 Jul 24 j 13:51	15° <del>0</del>		minimum elong	70 Oct 24 j 10:29	29° <del>5</del> 32'16	2°08'39
evening set	64 Jul 25 j 15:00	15° <del>0</del> 07'40		max. Earth dist.	70 Oct 24 j 06:30	29° <del>5</del> 31'06	11.04114 AU
					70 Oct 28 j 08:29	0° <del>0</del>	
conjunction	64 Aug 12 j 07:08	17° <del>0</del> 19'05	1°30'11	morning rise	70 Nov 09 j 23:16	1° <del>0</del> 28'28	
minimum elong	64 Aug 12 j 07:05	17° <del>0</del> 19'03	1°30'10	retrograde	71 Feb 17 j 10:44	8° <del>0</del> 25'06	
max. Earth dist.	64 Aug 12 j 12:07	17° <del>0</del> 20'38	10.42945 AU	opposition	71 Apr 28 j 06:23	5° <del>0</del> 08'23	2°29'53
morning rise	64 Aug 29 j 18:38	19° <del>0</del> 29'01		min. Earth dist.	71 Apr 28 j 09:39	5° <del>0</del> 07'47	9.06754 AU
retrograde	64 Dec 08 j 04:43	26° <del>0</del> 59'35		direct	71 Jul 08 j 16:16	1° <del>0</del> 48'16	
opposition	65 Feb 13 j 11:46	23° <del>0</del> 37'27	2°05'04	evening set	71 Oct 19 j 05:23	8° <del>0</del> 54'04	
min. Earth dist.	65 Feb 13 j 08:08	23° <del>0</del> 38'10	8.49134 AU				
direct	65 Apr 24 j 04:36	20° <del>0</del> 09'49		conjunction	71 Nov 04 j 19:33	10° <del>0</del> 50'12	1°55'39
evening set	65 Aug 08 j 03:58	27° <del>0</del> 57'21		minimum elong	71 Nov 04 j 19:35	10° <del>0</del> 50'12	1°55'39
	65 Aug 24 j 20:47	0° <del>0</del>		max. Earth dist.	71 Nov 04 j 15:08	10° <del>0</del> 48'54	11.08530 AU
				morning rise	71 Nov 21 j 07:28	12° <del>0</del> 45'44	
conjunction	65 Aug 25 j 14:49	0° <del>0</del> 05'34	1°51'22		71 Dec 11 j 13:33	15° <del>0</del>	
minimum elong	65 Aug 25 j 14:46	0° <del>0</del> 05'33	1°51'21	retrograde	72 Feb 29 j 03:30	19° <del>0</del> 41'30	
max. Earth dist.	65 Aug 25 j 18:05	0° <del>0</del> 06'34	10.55275 AU	opposition	72 May 09 j 07:07	16° <del>0</del> 24'50	2°11'11
morning rise	65 Sep 11 j 20:54	2° <del>0</del> 12'17		min. Earth dist.	72 May 09 j 11:31	16° <del>0</del> 24'01	9.09982 AU
retrograde	65 Dec 20 j 18:00	9° <del>0</del> 34'14			72 May 29 j 04:15	15° <del>0</del> 5'37	
opposition	66 Feb 26 j 10:28	6° <del>0</del> 13'27	2°27'23	direct	72 Jul 19 j 14:16	13° <del>0</del> 05'37	
min. Earth dist.	66 Feb 26 j 07:20	6° <del>0</del> 14'03	8.61481 AU		72 Sep 07 j 05:43	15° <del>0</del>	
direct	66 May 07 j 15:55	2° <del>0</del> 47'01		evening set	72 Oct 29 j 12:33	20° <del>0</del> 07'37	
evening set	66 Aug 21 j 06:10	10° <del>0</del> 26'24					
				conjunction	72 Nov 15 j 01:52	22° <del>0</del> 03'20	1°38'17
conjunction	66 Sep 07 j 11:58	12° <del>0</del> 31'36	2°06'44	minimum elong	72 Nov 15 j 01:54	22° <del>0</del> 03'21	1°38'16
minimum elong	66 Sep 07 j 11:56	12° <del>0</del> 31'35	2°06'44	max. Earth dist.	72 Nov 14 j 19:50	22° <del>0</del> 01'34	11.10596 AU
max. Earth dist.	66 Sep 07 j 14:19	12° <del>0</del> 32'18	10.67413 AU	morning rise	72 Dec 01 j 13:52	23° <del>0</del> 58'45	
morning rise	66 Sep 24 j 12:54	14° <del>0</del> 35'20			73 Feb 06 j 02:01	0° <del>0</del>	
retrograde	67 Jan 02 j 02:03	21° <del>0</del> 49'38		retrograde	73 Mar 11 j 19:15	0° <del>0</del> 55'09	
opposition	67 Mar 11 j 03:25	18° <del>0</del> 30'05	2°42'16		73 Apr 15 j 06:59	30° <del>0</del> 5'37	
min. Earth dist.	67 Mar 11 j 01:24	18° <del>0</del> 30'29	8.73346 AU	opposition	73 May 21 j 07:26	27° <del>0</del> 38'13	1°47'34
direct	67 May 20 j 17:54	15° <del>0</del> 04'58		min. Earth dist.	73 May 21 j 13:26	27° <del>0</del> 37'07	9.10798 AU
evening set	67 Sep 02 j 22:09	22° <del>0</del> 36'20		direct	73 Jul 31 j 10:00	24° <del>0</del> 19'38	
					73 Oct 29 j 00:04	0° <del>0</del>	
conjunction	67 Sep 19 j 23:21	24° <del>0</del> 38'50	2°16'03	evening set	73 Nov 09 j 17:52	1° <del>0</del> 19'13	
minimum elong	67 Sep 19 j 23:19	24° <del>0</del> 38'50	2°16'02				
max. Earth dist.	67 Sep 20 j 00:30	24° <del>0</del> 39'11	10.78801 AU	conjunction	73 Nov 26 j 06:59	3° <del>0</del> 15'00	1°17'11
morning rise	67 Oct 06 j 19:47	26° <del>0</del> 39'58		minimum elong	73 Nov 26 j 07:02	3° <del>0</del> 15'00	1°17'10
	67 Nov 06 j 01:10	0° <del>0</del>		max. Earth dist.	73 Nov 25 j 23:19	3° <del>0</del> 12'44	11.10205 AU
retrograde	68 Jan 14 j 03:06	3° <del>0</del> 47'49		morning rise	73 Dec 12 j 19:51	5° <del>0</del> 10'42	
opposition	68 Mar 22 j 15:39	0° <del>0</del> 29'22	2°49'39	retrograde	74 Mar 23 j 14:23	12° <del>0</del> 50'21	
min. Earth dist.	68 Mar 22 j 15:27	0° <del>0</del> 29'24	8.84205 AU	opposition	74 Jun 02 j 08:09	8° <del>0</del> 51'51	1°19'51
	68 Mar 29 j 02:49	30° <del>0</del> 5'36		min. Earth dist.	74 Jun 02 j 15:07	8° <del>0</del> 50'34	9.09108 AU
direct	68 Jun 01 j 14:15	27° <del>0</del> 05'36		direct	74 Aug 12 j 05:55	5° <del>0</del> 33'40	
	68 Aug 02 j 09:10	0° <del>0</del>		evening set	74 Nov 20 j 23:14	12° <del>0</del> 32'20	
evening set	68 Sep 14 j 04:45	4° <del>0</del> 29'23					



conjunction	74 Dec 07 j 12:52	14°♂28'36	0°53'04	conjunction	81 Feb 15 j 10:02	25°♂39'43	-1°-44'-23
minimum elong	74 Dec 07 j 12:54	14°♂28'37	0°53'03	minimum elong	81 Feb 15 j 09:59	25°♂39'42	1°44'24
max. Earth dist.	74 Dec 07 j 04:47	14°♂26'14	11.07287 AU	max. Earth dist.	81 Feb 15 j 05:34	25°♂38'19	10.49422 AU
morning rise	74 Dec 24 j 02:56	16°♂25'04		morning rise	81 Mar 04 j 15:03	27°♂47'45	
retrograde	75 Apr 04 j 12:42	23°♂27'35			81 Mar 23 j 06:33	0°♂	
opposition	75 Jun 14 j 10:24	20°♂09'15	0°48'53	retrograde	81 Jun 18 j 20:05	5°♂40'43	
min. Earth dist.	75 Jun 14 j 17:17	20°♂07'59	9.04903 AU	opposition	81 Aug 27 j 16:05	2°♂13'49	-2°-21'-4
direct	75 Aug 24 j 00:10	16°♂51'15		min. Earth dist.	81 Aug 27 j 18:36	2°♂13'19	8.43224 AU
evening set	75 Dec 02 j 06:30	23°♂50'38			81 Sep 27 j 17:23	30°♂	
				direct	81 Nov 03 j 05:18	28°♂51'35	
conjunction	75 Dec 18 j 21:06	25°♂47'48	0°26'41		81 Dec 08 j 22:49	0°♂	
minimum elong	75 Dec 18 j 21:07	25°♂47'49	0°26'42	evening set	82 Feb 11 j 13:14	6°♂25'53	
max. Earth dist.	75 Dec 18 j 13:02	25°♂45'25	11.01915 AU				
morning rise	76 Jan 04 j 12:49	27°♂45'25		conjunction	82 Feb 28 j 16:53	8°♂35'04	-2°-1'-58
	76 Jan 24 j 15:50	0°♂		minimum elong	82 Feb 28 j 16:50	8°♂35'03	2°01'59
retrograde	76 Apr 15 j 17:40	4°♂53'26		max. Earth dist.	82 Feb 28 j 13:21	8°♂33'57	10.37001 AU
opposition	76 Jun 25 j 15:36	1°♂34'03	0°15'39	morning rise	82 Mar 18 j 01:26	10°♂45'48	
min. Earth dist.	76 Jun 25 j 22:28	1°♂32'47	8.98358 AU	retrograde	82 Jul 02 j 20:50	18°♂48'46	
	76 Jul 17 j 17:12	30°♂		opposition	82 Sep 10 j 05:22	15°♂20'29	-2°-39'-40
direct	76 Sep 03 j 19:35	28°♂15'57		min. Earth dist.	82 Sep 10 j 06:52	15°♂20'11	8.31118 AU
	76 Oct 20 j 02:50	0°♂		direct	82 Nov 16 j 06:47	11°♂57'00	
evening set	76 Dec 12 j 17:23	5°♂17'35		evening set	83 Feb 25 j 03:40	19°♂40'31	
desc. node	76 Dec 14 j 22:19	5°♂33'05					
				conjunction	83 Mar 14 j 11:00	21°♂52'24	-2°-13'-33
conjunction	76 Dec 29 j 09:12	7°♂16'03	0°-1'-6	minimum elong	83 Mar 14 j 10:59	21°♂52'24	2°13'34
minimum elong	76 Dec 29 j 09:12	7°♂16'03	0°01'07	max. Earth dist.	83 Mar 14 j 09:22	21°♂51'53	10.25285 AU
behind sun begin	76 Dec 29 j 02:13	7°♂14'00		morning rise	83 Mar 31 j 23:21	24°♂05'52	
behind sun end	76 Dec 29 j 16:11	7°♂18'07			83 May 25 j 14:07	0°♂	
max. Earth dist.	76 Dec 29 j 00:27	7°♂13'28	10.94334 AU	retrograde	83 Jul 17 j 04:31	2°♂17'50	
morning rise	77 Jan 15 j 03:08	9°♂15'12			83 Sep 08 j 21:58	30°♂	
retrograde	77 Apr 28 j 03:06	16°♂30'09		opposition	83 Sep 24 j 00:42	28°♂48'24	-2°-50'-8
opposition	77 Jul 08 j 00:33	13°♂09'30	0°-18'-47	min. Earth dist.	83 Sep 24 j 00:52	28°♂48'22	8.20036 AU
min. Earth dist.	77 Jul 08 j 07:44	13°♂08'09	8.89773 AU	direct	83 Nov 29 j 16:31	25°♂23'38	
direct	77 Sep 15 j 15:44	9°♂50'59			84 Feb 11 j 20:55	0°♂	
evening set	77 Dec 24 j 09:45	16°♂56'30		evening set	84 Mar 10 j 04:58	3°♂16'17	
conjunction	78 Jan 10 j 03:08	18°♂56'34	0°-29'-14	conjunction	84 Mar 27 j 16:36	5°♂30'53	-2°-18'-1
minimum elong	78 Jan 10 j 03:07	18°♂56'33	0°29'15	minimum elong	84 Mar 27 j 16:37	5°♂30'53	2°18'01
max. Earth dist.	78 Jan 09 j 18:06	18°♂53'51	10.84872 AU	max. Earth dist.	84 Mar 27 j 17:26	5°♂31'09	10.14921 AU
morning rise	78 Jan 26 j 23:35	20°♂57'34		morning rise	84 Apr 14 j 08:55	7°♂46'59	
retrograde	78 May 10 j 18:16	28°♂20'45		retrograde	84 Jul 30 j 16:55	16°♂06'08	
opposition	78 Jul 20 j 13:52	24°♂58'37	0°-53'-10	opposition	84 Oct 07 j 01:10	12°♂35'52	-2°-51'-8
min. Earth dist.	78 Jul 20 j 21:00	24°♂57'16	8.79511 AU	min. Earth dist.	84 Oct 06 j 23:35	12°♂36'12	8.10605 AU
direct	78 Sep 27 j 17:45	21°♂39'26		direct	84 Dec 12 j 11:31	9°♂09'51	
evening set	79 Jan 05 j 08:53	28°♂50'19		evening set	85 Mar 24 j 16:18	17°♂10'55	
	79 Jan 15 j 00:27	0°♂					
				conjunction	85 Apr 11 j 08:33	19°♂28'06	-2°-14'-34
conjunction	79 Jan 22 j 04:18	0°♂52'18	0°-56'-40	minimum elong	85 Apr 11 j 08:35	19°♂28'06	2°14'35
minimum elong	79 Jan 22 j 04:16	0°♂52'18	0°56'41	max. Earth dist.	85 Apr 11 j 12:03	19°♂29'14	10.06523 AU
max. Earth dist.	79 Jan 21 j 20:40	0°♂49'59	10.73915 AU	morning rise	85 Apr 29 j 04:47	21°♂46'34	
morning rise	79 Feb 08 j 03:21	2°♂55'25			85 Jul 31 j 14:40	0°♂	
retrograde	79 May 23 j 18:40	10°♂27'58		retrograde	85 Aug 14 j 09:21	0°♂10'25	
opposition	79 Aug 02 j 08:37	7°♂04'13	-1°-26'-5		85 Aug 28 j 05:57	30°♂	
min. Earth dist.	79 Aug 02 j 14:23	7°♂03'07	8.67995 AU	opposition	85 Oct 21 j 05:51	26°♂39'43	-2°-41'-58
direct	79 Oct 10 j 00:16	3°♂44'12		min. Earth dist.	85 Oct 21 j 02:16	26°♂40'27	8.03397 AU
evening set	80 Jan 17 j 16:17	11°♂01'46		direct	85 Dec 26 j 12:37	23°♂12'34	
					86 Mar 28 j 20:06	0°♂	
conjunction	80 Feb 03 j 14:06	13°♂05'57	-1°-22'-9	evening set	86 Apr 08 j 12:03	1°♂20'43	
minimum elong	80 Feb 03 j 14:04	13°♂05'56	1°22'11				
max. Earth dist.	80 Feb 03 j 08:18	13°♂04'09	10.61923 AU	conjunction	86 Apr 26 j 08:47	3°♂40'05	-2°-2'-59
	80 Feb 19 j 02:09	15°♂		minimum elong	86 Apr 26 j 08:50	3°♂40'06	2°03'00
morning rise	80 Feb 20 j 15:57	15°♂11'25		max. Earth dist.	86 Apr 26 j 14:48	3°♂42'04	10.00628 AU
retrograde	80 Jun 05 j 03:32	22°♂54'04		morning rise	86 May 14 j 08:34	6°♂00'29	
opposition	80 Aug 14 j 09:18	19°♂28'42	-1°-55'-57	retrograde	86 Aug 29 j 04:07	14°♂26'06	
min. Earth dist.	80 Aug 14 j 13:17	19°♂27'55	8.55716 AU	opposition	86 Nov 04 j 13:13	10°♂55'23	-2°-22'-44
direct	80 Oct 21 j 11:06	16°♂07'39		min. Earth dist.	86 Nov 04 j 07:46	10°♂56'31	7.98893 AU
evening set	81 Jan 29 j 09:30	23°♂33'08		direct	87 Jan 09 j 19:11	7°♂27'16	



	87 Apr 18 j 06:42	15°♄		evening set	93 Jul 20 j 00:16	9°♄43'50	
evening set	87 Apr 23 j 14:09	15°♄40'38					
conjunction	87 May 11 j 14:52	18°♄01'37	-1°-43'-43	conjunction	93 Aug 06 j 18:46	11°♄56'37	1°19'18
minimum elong	87 May 11 j 14:56	18°♄01'38	1°43'44	minimum elong	93 Aug 06 j 18:42	11°♄56'36	1°19'17
max. Earth dist.	87 May 11 j 22:42	18°♄04'12	9.97652 AU	max. Earth dist.	93 Aug 07 j 01:50	11°♄58'50	10.38538 AU
morning rise	87 May 29 j 17:33	20°♄23'16		morning rise	93 Aug 24 j 08:34	14°♄07'56	
retrograde	87 Sep 12 j 22:31	28°♄47'30		retrograde	93 Aug 31 j 12:13	15°♄	
opposition	87 Nov 18 j 21:35	25°♄17'12	-1°-54'-24	opposition	93 Dec 03 j 03:14	21°♄42'36	
min. Earth dist.	87 Nov 18 j 15:05	25°♄18'33	7.97428 AU	opposition	94 Feb 08 j 05:13	18°♄20'18	1°53'06
direct	88 Jan 24 j 06:10	21°♄48'18		min. Earth dist.	94 Feb 07 j 23:59	18°♄21'20	8.44707 AU
evening set	88 May 07 j 19:58	0°♄04'44		direct	94 Apr 06 j 18:27	15°♄♌	
	88 May 07 j 05:11	0°♄			94 Apr 18 j 14:59	14°♄52'47	
				evening set	94 Apr 30 j 11:16	15°♄	
conjunction	88 May 25 j 23:36	2°♄26'31	-1°-17'-56		94 Aug 02 j 18:20	22°♄43'42	
minimum elong	88 May 25 j 23:40	2°♄26'32	1°17'56	conjunction	94 Aug 20 j 07:39	24°♄53'16	1°42'48
max. Earth dist.	88 May 26 j 08:29	2°♄29'26	9.97816 AU	minimum elong	94 Aug 20 j 07:36	24°♄53'15	1°42'48
morning rise	88 Jun 13 j 04:00	4°♄48'33		max. Earth dist.	94 Aug 20 j 12:50	24°♄54'52	10.50878 AU
retrograde	88 Sep 26 j 13:51	13°♄08'25		morning rise	94 Sep 06 j 15:56	27°♄01'18	
opposition	88 Dec 02 j 05:14	9°♄38'58	-1°-18'-55		94 Oct 02 j 13:43	0°♄♐	
min. Earth dist.	88 Dec 01 j 22:18	9°♄40'24	7.99120 AU	retrograde	94 Dec 15 j 20:22	4°♄26'52	
direct	89 Feb 06 j 21:20	6°♄09'34		opposition	95 Feb 21 j 06:48	1°♄05'59	2°18'30
evening set	89 May 23 j 02:25	14°♄26'40		min. Earth dist.	95 Feb 21 j 03:55	1°♄06'33	8.57064 AU
					95 Mar 07 j 14:23	30°♄♌	
conjunction	89 Jun 10 j 07:25	16°♄48'18	0°-47'-23	direct	95 May 02 j 05:05	27°♄39'30	
minimum elong	89 Jun 10 j 07:27	16°♄48'18	0°47'23		95 Jun 25 j 12:18	0°♄♐	
max. Earth dist.	89 Jun 10 j 16:44	16°♄51'20	10.01113 AU	evening set	95 Aug 16 j 01:44	5°♄22'25	
morning rise	89 Jun 28 j 11:54	19°♄09'44					
retrograde	89 Oct 10 j 22:14	27°♄22'44		conjunction	95 Sep 02 j 09:43	7°♄28'52	2°00'45
opposition	89 Dec 16 j 10:22	23°♄54'29	0°-38'-48	minimum elong	95 Sep 02 j 09:40	7°♄28'51	2°00'44
min. Earth dist.	89 Dec 16 j 03:22	23°♄55'56	8.03872 AU	max. Earth dist.	95 Sep 02 j 11:55	7°♄29'33	10.63008 AU
direct	90 Feb 21 j 13:26	20°♄24'55		morning rise	95 Sep 19 j 12:47	9°♄33'50	
evening set	90 Jun 07 j 06:19	28°♄40'17		retrograde	95 Dec 28 j 06:18	16°♄51'22	
	90 Jun 17 j 15:10	0°♄♑		opposition	96 Mar 05 j 02:31	13°♄31'45	2°36'38
conjunction	90 Jun 25 j 10:57	1°♄00'47	0°-14'-15	min. Earth dist.	96 Mar 05 j 01:40	13°♄31'55	8.68938 AU
minimum elong	90 Jun 25 j 10:58	1°♄00'47	0°14'15	direct	96 May 14 j 11:41	10°♄06'26	
behind sun begin	90 Jun 25 j 07:44	0°♄59'45		evening set	96 Aug 27 j 22:37	17°♄41'25	
behind sun end	90 Jun 25 j 14:12	1°♄01'50					
max. Earth dist.	90 Jun 25 j 20:08	1°♄03'45	10.07330 AU	conjunction	96 Sep 14 j 01:37	19°♄45'03	2°12'40
morning rise	90 Jul 13 j 13:52	3°♄20'41		minimum elong	96 Sep 14 j 01:35	19°♄45'02	2°12'40
retrograde	90 Oct 24 j 23:06	11°♄25'03		max. Earth dist.	96 Sep 14 j 01:13	19°♄44'55	10.74424 AU
asc. node	90 Dec 02 j 23:00	10°♄04'06		morning rise	96 Oct 01 j 00:02	21°♄47'17	
opposition	90 Dec 30 j 11:29	7°♄58'12	0°03'02	retrograde	97 Jan 08 j 09:05	28°♄57'59	
min. Earth dist.	90 Dec 30 j 04:29	7°♄59'38	8.11377 AU	opposition	97 Mar 17 j 17:13	25°♄39'25	2°47'14
direct	91 Mar 08 j 03:19	4°♄28'45		min. Earth dist.	97 Mar 17 j 17:31	25°♄39'21	8.79876 AU
evening set	91 Jun 22 j 04:43	12°♄40'13		direct	97 May 27 j 12:48	22°♄15'17	
				evening set	97 Sep 09 j 09:30	29°♄42'36	
conjunction	91 Jul 10 j 07:20	14°♄58'44	0°19'17		97 Sep 11 j 20:39	0°♄♑	
minimum elong	91 Jul 10 j 07:19	14°♄58'43	0°19'18	conjunction	97 Sep 26 j 08:17	1°♄43'46	2°18'30
max. Earth dist.	91 Jul 10 j 16:01	15°♄01'30	10.16048 AU	minimum elong	97 Sep 26 j 08:16	1°♄43'46	2°18'30
morning rise	91 Jul 28 j 07:03	17°♄16'15		max. Earth dist.	97 Sep 26 j 06:31	1°♄43'14	10.84715 AU
retrograde	91 Nov 07 j 16:42	25°♄10'55		morning rise	97 Oct 13 j 02:47	3°♄43'41	
opposition	92 Jan 13 j 07:26	21°♄45'35	0°43'49	retrograde	98 Jan 20 j 09:21	10°♄48'49	
min. Earth dist.	92 Jan 13 j 00:23	21°♄47'01	8.21125 AU	opposition	98 Mar 30 j 03:22	7°♄31'00	2°50'26
direct	92 Mar 21 j 13:04	18°♄16'33		min. Earth dist.	98 Mar 30 j 04:32	7°♄30'47	8.89478 AU
evening set	92 Jul 05 j 19:21	26°♄22'18		direct	98 Jun 09 j 06:06	4°♄08'04	
				evening set	98 Sep 21 j 11:48	11°♄28'12	
conjunction	92 Jul 23 j 18:27	28°♄38'09	0°51'01				
minimum elong	92 Jul 23 j 18:24	28°♄38'09	0°51'02	conjunction	98 Oct 08 j 07:10	13°♄27'23	2°18'22
max. Earth dist.	92 Jul 24 j 02:34	28°♄40'44	10.26678 AU	minimum elong	98 Oct 08 j 07:11	13°♄27'23	2°18'23
	92 Aug 03 j 12:58	0°♄		max. Earth dist.	98 Oct 08 j 04:35	13°♄26'37	10.93501 AU
morning rise	92 Aug 10 j 13:36	0°♄52'44		morning rise	98 Oct 24 j 22:35	15°♄25'28	
retrograde	92 Nov 20 j 02:40	8°♄37'17		retrograde	99 Feb 01 j 05:17	22°♄26'17	
opposition	93 Jan 25 j 21:26	5°♄13'29	1°21'08	opposition	99 Apr 11 j 09:40	19°♄08'59	2°46'34
min. Earth dist.	93 Jan 25 j 14:51	5°♄14'48	8.32476 AU	min. Earth dist.	99 Apr 11 j 12:31	19°♄08'27	8.97391 AU
direct	93 Apr 04 j 17:04	1°♄45'07		direct	99 Jun 21 j 15:55	15°♄47'08	



evening set	99 Oct 03 j 06:47	23° $\Omega$ 00'54	
conjunction	99 Oct 19 j 23:25	24° $\Omega$ 58'33	2°12'36
minimum elong	99 Oct 19 j 23:27	24° $\Omega$ 58'33	2°12'37
max. Earth dist.	99 Oct 19 j 19:04	24° $\Omega$ 57'15	11.00465 AU
morning rise	99 Nov 05 j 12:49	26° $\Omega$ 55'19	
	99 Dec 03 j 20:12	0° $\mathbb{M}$	
retrograde	100 Feb 12 j 22:11	3° $\mathbb{M}$ 53'13	
opposition	100 Apr 22 j 13:19	0° $\mathbb{M}$ 36'11	2°36'07
min. Earth dist.	100 Apr 22 j 17:59	0° $\mathbb{M}$ 35'19	9.03345 AU
	100 Apr 30 j 17:16	30° $\mathbb{R}$ $\Omega$	
direct	100 Jul 02 j 21:53	27° $\Omega$ 15'15	
	100 Sep 01 j 03:22	0° $\mathbb{M}$	
evening set	100 Oct 13 j 19:42	4° $\mathbb{M}$ 23'37	
conjunction	100 Oct 30 j 10:23	6° $\mathbb{M}$ 20'13	2°01'39
minimum elong	100 Oct 30 j 10:25	6° $\mathbb{M}$ 20'14	2°01'39
max. Earth dist.	100 Oct 30 j 04:12	6° $\mathbb{M}$ 18'24	11.05376 AU
morning rise	100 Nov 15 j 22:47	8° $\mathbb{M}$ 16'10	



retrograde	100 Feb 12 j 22:11	3°♄53'13		conjunction	105 Dec 24 j 23:04	2°♄42'50	0°10'38
opposition	100 Apr 22 j 13:19	0°♄36'11	2°36'07	minimum elong	105 Dec 24 j 23:05	2°♄42'50	0°10'39
min. Earth dist.	100 Apr 22 j 17:59	0°♄35'19	9.03345 AU	behind sun begin	105 Dec 24 j 17:38	2°♄41'14	
	100 Apr 30 j 17:16	30°♄		behind sun end	105 Dec 25 j 04:32	2°♄44'26	
direct	100 Jul 02 j 21:53	27°♄15'15		max. Earth dist.	105 Dec 24 j 15:14	2°♄40'31	10.95992 AU
	100 Sep 01 j 03:22	0°♄		morning rise	106 Jan 10 j 16:13	4°♄41'29	
evening set	100 Oct 13 j 19:42	4°♄23'37		retrograde	106 Apr 23 j 06:43	11°♄53'54	
				desc. node	106 May 16 j 09:28	11°♄28'27	
conjunction	100 Oct 30 j 10:23	6°♄20'13	2°01'39	opposition	106 Jul 03 j 05:34	8°♄33'20	0°-4'-22
minimum elong	100 Oct 30 j 10:25	6°♄20'14	2°01'39	min. Earth dist.	106 Jul 03 j 11:51	8°♄32'10	8.92063 AU
max. Earth dist.	100 Oct 30 j 04:12	6°♄18'24	11.05376 AU	direct	106 Sep 11 j 02:57	5°♄14'37	
morning rise	100 Nov 15 j 22:47	8°♄16'10		evening set	106 Dec 19 j 21:39	12°♄18'53	
	101 Feb 07 j 15:51	15°♄					
retrograde	101 Feb 23 j 13:35	15°♄12'39		conjunction	107 Jan 05 j 14:31	14°♄18'23	0°-17'-32
	101 Mar 11 j 15:54	15°♄		minimum elong	107 Jan 05 j 14:30	14°♄18'23	0°17'33
opposition	101 May 04 j 14:58	11°♄55'34	2°19'43	max. Earth dist.	107 Jan 05 j 07:44	14°♄16'22	10.87750 AU
min. Earth dist.	101 May 04 j 20:37	11°♄54'32	9.07141 AU	morning rise	107 Jan 22 j 09:47	16°♄18'42	
direct	101 Jul 14 j 23:22	8°♄35'27		retrograde	107 May 05 j 20:34	23°♄38'46	
	101 Oct 19 j 09:22	15°♄		opposition	107 Jul 15 j 17:09	20°♄16'57	0°-38'-57
evening set	101 Oct 25 j 04:22	15°♄39'34		min. Earth dist.	107 Jul 15 j 22:22	20°♄15'59	8.82971 AU
				direct	107 Sep 23 j 02:38	16°♄57'55	
conjunction	101 Nov 10 j 18:03	17°♄35'36	1°46'04	evening set	107 Dec 31 j 17:59	24°♄06'47	
minimum elong	101 Nov 10 j 18:05	17°♄35'37	1°46'03				
max. Earth dist.	101 Nov 10 j 11:15	17°♄33'36	11.08071 AU	conjunction	108 Jan 17 j 12:33	26°♄08'02	0°-45'-24
morning rise	101 Nov 27 j 06:09	19°♄31'13		minimum elong	108 Jan 17 j 12:32	26°♄08'02	0°45'26
retrograde	102 Mar 07 j 05:55	26°♄27'48		max. Earth dist.	108 Jan 17 j 06:08	26°♄06'06	10.77910 AU
opposition	102 May 16 j 15:23	23°♄10'25	1°58'04	morning rise	108 Feb 03 j 10:23	28°♄10'19	
min. Earth dist.	102 May 16 j 21:03	23°♄09'22	9.08654 AU		108 Feb 19 j 06:27	0°≈	
direct	102 Jul 26 j 21:50	19°♄50'57		retrograde	108 May 17 j 18:46	5°≈39'11	
evening set	102 Nov 05 j 10:29	26°♄52'08		opposition	108 Jul 27 j 09:55	2°≈16'03	-1°-12'-40
				min. Earth dist.	108 Jul 27 j 14:30	2°≈15'11	8.72490 AU
conjunction	102 Nov 21 j 23:55	28°♄48'05	1°26'27		108 Aug 29 j 06:11	30°♄	
minimum elong	102 Nov 21 j 23:57	28°♄48'05	1°26'26	direct	108 Oct 04 j 05:41	28°♄56'27	
max. Earth dist.	102 Nov 21 j 17:11	28°♄46'06	11.08453 AU		108 Nov 08 j 09:11	0°≈	
	102 Dec 02 j 05:05	0°♄		evening set	109 Jan 11 j 22:04	6°≈11'21	
morning rise	102 Dec 08 j 12:21	0°♄43'49					
retrograde	103 Mar 19 j 01:48	7°♄42'01		conjunction	109 Jan 28 j 18:42	8°≈14'37	-1°-11'-51
opposition	103 May 28 j 16:06	4°♄24'09	1°31'57	minimum elong	109 Jan 28 j 18:39	8°≈14'36	1°11'53
min. Earth dist.	103 May 28 j 22:09	4°♄23'02	9.07831 AU	max. Earth dist.	109 Jan 28 j 12:40	8°≈12'46	10.66876 AU
direct	103 Aug 07 j 17:15	1°♄05'12		morning rise	109 Feb 14 j 19:25	10°≈19'09	
evening set	103 Nov 16 j 15:54	8°♄04'50			109 Mar 30 j 07:51	15°≈	
				retrograde	109 May 30 j 23:39	17°≈57'40	
conjunction	103 Dec 03 j 05:26	10°♄01'06	1°03'29		109 Aug 03 j 12:17	15°≈	
minimum elong	103 Dec 03 j 05:28	10°♄01'06	1°03'29	opposition	109 Aug 09 j 08:22	14°≈33'09	-1°-43'-59
max. Earth dist.	103 Dec 02 j 21:52	9°♄58'52	11.06511 AU	min. Earth dist.	109 Aug 09 j 12:27	14°≈32'22	8.61054 AU
morning rise	103 Dec 19 j 18:57	11°♄57'25		direct	109 Oct 16 j 14:03	11°≈12'47	
retrograde	104 Mar 29 j 21:47	18°♄58'49			109 Dec 23 j 18:05	15°≈	
opposition	104 Jun 08 j 18:06	15°♄40'15	1°02'12	evening set	110 Jan 24 j 11:21	18°≈35'01	
min. Earth dist.	104 Jun 09 j 00:57	15°♄38'59	9.04709 AU				
direct	104 Aug 18 j 10:32	12°♄21'35		conjunction	110 Feb 10 j 10:32	20°≈40'32	-1°-35'-35
evening set	104 Nov 26 j 22:27	19°♄21'13		minimum elong	110 Feb 10 j 10:29	20°≈40'31	1°35'37
				max. Earth dist.	110 Feb 10 j 06:03	20°≈39'08	10.55112 AU
conjunction	104 Dec 13 j 12:35	21°♄18'11	0°37'55	morning rise	110 Feb 27 j 14:15	22°≈47'27	
minimum elong	104 Dec 13 j 12:36	21°♄18'12	0°37'56		110 May 17 j 16:31	0°♄	
max. Earth dist.	104 Dec 13 j 04:05	21°♄15'41	11.02314 AU	retrograde	110 Jun 13 j 11:32	0°♄36'06	
morning rise	104 Dec 30 j 03:48	23°♄15'30			110 Jul 10 j 13:09	30°≈	
	105 Mar 20 j 21:33	0°♄		opposition	110 Aug 22 j 12:46	27°≈10'13	-2°-11'-13
retrograde	105 Apr 10 j 23:14	0°♄21'39		min. Earth dist.	110 Aug 22 j 15:35	27°≈09'40	8.49167 AU
	105 May 02 j 07:10	30°♄		direct	110 Oct 29 j 07:16	23°≈48'55	
opposition	105 Jun 20 j 22:14	27°♄02'11	0°29'44		111 Jan 26 j 11:46	0°♄	
min. Earth dist.	105 Jun 21 j 05:23	27°♄00'52	8.99398 AU	evening set	111 Feb 06 j 10:41	1°♄19'24	
direct	105 Aug 30 j 06:37	23°♄43'35					
	105 Dec 01 j 20:21	0°♄		conjunction	111 Feb 23 j 12:55	3°♄27'23	-1°-55'-14
evening set	105 Dec 08 j 07:43	0°♄44'45		minimum elong	111 Feb 23 j 12:52	3°♄27'23	1°55'15
				max. Earth dist.	111 Feb 23 j 10:50	3°♄26'44	10.43161 AU



morning rise	111 Mar 12 j 19:49	5° <del>✕</del> 36'52		min. Earth dist.	117 Nov 26 j 08:37	3° <del>II</del> 53'51	7.99282 AU
retrograde	111 Jun 27 j 09:28	13° <del>✕</del> 35'32		direct	118 Feb 01 j 04:46	0° <del>II</del> 23'40	
opposition	111 Sep 04 j 23:31	10° <del>✕</del> 08'20	-2°-32'-39	evening set	118 May 17 j 01:32	8° <del>II</del> 39'59	
min. Earth dist.	111 Sep 05 j 00:22	10° <del>✕</del> 08'10	8.37391 AU				
direct	111 Nov 11 j 05:56	6° <del>✕</del> 45'58		conjunction	118 Jun 04 j 06:09	11° <del>II</del> 01'35	-1°00'-35
evening set	112 Feb 19 j 20:40	14° <del>✕</del> 25'14		minimum elong	118 Jun 04 j 06:12	11° <del>II</del> 01'36	1°00'35
				max. Earth dist.	118 Jun 04 j 14:36	11° <del>II</del> 04'21	10.00406 AU
conjunction	112 Mar 08 j 02:25	16° <del>✕</del> 35'49	-2°-9'-25	morning rise	118 Jun 22 j 10:44	13° <del>II</del> 23'12	
minimum elong	112 Mar 08 j 02:23	16° <del>✕</del> 35'48	2°09'25	retrograde	118 Oct 05 j 05:42	21° <del>II</del> 38'46	
max. Earth dist.	112 Mar 08 j 02:27	16° <del>✕</del> 35'50	10.31605 AU	opposition	118 Dec 10 j 20:27	18° <del>II</del> 10'04	0°-55'-59
morning rise	112 Mar 25 j 12:53	18° <del>✕</del> 47'57		min. Earth dist.	118 Dec 10 j 13:33	18° <del>II</del> 11'30	8.02356 AU
retrograde	112 Jul 10 j 14:56	26° <del>✕</del> 55'49		direct	119 Feb 15 j 19:42	14° <del>II</del> 40'38	
opposition	112 Sep 17 j 16:16	23° <del>✕</del> 27'26	-2°-46'-36	evening set	119 Jun 01 j 06:16	22° <del>II</del> 56'15	
min. Earth dist.	112 Sep 17 j 15:18	23° <del>✕</del> 27'38	8.26289 AU				
direct	112 Nov 23 j 11:38	20° <del>✕</del> 03'53		conjunction	119 Jun 19 j 11:24	25° <del>II</del> 17'12	0°-28'-21
evening set	113 Mar 04 j 17:32	27° <del>✕</del> 52'03		minimum elong	119 Jun 19 j 11:25	25° <del>II</del> 17'13	0°28'22
	113 Mar 21 j 10:46	0° <del>Y</del>		max. Earth dist.	119 Jun 19 j 20:35	25° <del>II</del> 20'11	10.05000 AU
conjunction	113 Mar 22 j 03:13	0° <del>Y</del> 05'17	-2°-16'-55	morning rise	119 Jul 07 j 15:04	27° <del>II</del> 37'43	
minimum elong	113 Mar 22 j 03:13	0° <del>Y</del> 05'17	2°16'55		119 Jul 26 j 22:07	0° <del>☿</del>	
max. Earth dist.	113 Mar 22 j 04:28	0° <del>Y</del> 05'41	10.21008 AU	retrograde	119 Oct 19 j 10:16	5° <del>☿</del> 45'25	
morning rise	113 Apr 08 j 17:33	2° <del>Y</del> 20'02		opposition	119 Dec 24 j 22:46	2° <del>☿</del> 17'50	0°-14'-38
retrograde	113 Jul 25 j 01:58	10° <del>Y</del> 35'35		min. Earth dist.	119 Dec 24 j 15:42	2° <del>☿</del> 19'17	8.08300 AU
opposition	113 Oct 01 j 14:19	7° <del>Y</del> 06'16	-2°-51'-36	direct	120 Jan 24 j 11:10	30° <del>R</del> <del>II</del>	
min. Earth dist.	113 Oct 01 j 12:22	7° <del>Y</del> 06'40	8.16395 AU		120 Mar 01 j 08:58	28° <del>II</del> 48'10	
direct	113 Dec 07 j 01:49	3° <del>Y</del> 41'27		asc. node	120 Apr 07 j 03:00	0° <del>☿</del>	
evening set	114 Mar 19 j 00:29	11° <del>Y</del> 38'11		evening set	120 May 05 j 16:43	2° <del>☿</del> 20'56	
					120 Jun 15 j 06:50	7° <del>☿</del> 00'55	
conjunction	114 Apr 05 j 14:30	13° <del>Y</del> 54'00	-2°-16'-48	conjunction	120 Jul 03 j 10:39	9° <del>☿</del> 20'18	0°05'15
minimum elong	114 Apr 05 j 14:31	13° <del>Y</del> 54'00	2°16'48	minimum elong	120 Jul 03 j 10:38	9° <del>☿</del> 20'18	0°05'15
max. Earth dist.	114 Apr 05 j 16:42	13° <del>Y</del> 54'43	10.11895 AU	behind sun begin	120 Jul 03 j 03:32	9° <del>☿</del> 18'02	
morning rise	114 Apr 23 j 08:52	16° <del>Y</del> 11'13		behind sun end	120 Jul 03 j 17:44	9° <del>☿</del> 22'33	
retrograde	114 Aug 08 j 16:49	24° <del>Y</del> 32'26		max. Earth dist.	120 Jul 03 j 19:40	9° <del>☿</del> 23'11	10.12261 AU
opposition	114 Oct 15 j 17:04	21° <del>Y</del> 02'32	-2°-46'-42	morning rise	120 Jul 21 j 11:44	11° <del>☿</del> 38'49	
min. Earth dist.	114 Oct 15 j 14:25	21° <del>Y</del> 03'05	8.08227 AU	retrograde	120 Nov 01 j 07:43	19° <del>☿</del> 37'17	
direct	114 Dec 20 j 23:49	17° <del>Y</del> 36'29		opposition	121 Jan 06 j 20:33	16° <del>☿</del> 11'02	0°26'49
evening set	115 Apr 02 j 16:18	25° <del>Y</del> 40'53		min. Earth dist.	121 Jan 06 j 14:11	16° <del>☿</del> 12'20	8.16703 AU
conjunction	115 Apr 20 j 10:50	27° <del>Y</del> 59'04	-2°-8'-36	direct	121 Mar 15 j 19:40	12° <del>☿</del> 41'29	
minimum elong	115 Apr 20 j 10:53	27° <del>Y</del> 59'05	2°08'36	evening set	121 Jun 30 j 00:23	20° <del>☿</del> 49'25	
max. Earth dist.	115 Apr 20 j 14:18	28° <del>Y</del> 00'12	10.04815 AU	conjunction	121 Jul 18 j 01:09	23° <del>☿</del> 06'26	0°37'51
	115 May 05 j 23:33	0° <del>♄</del>		minimum elong	121 Jul 18 j 01:07	23° <del>☿</del> 06'26	0°37'51
morning rise	115 May 08 j 09:09	0° <del>♄</del> 18'27		max. Earth dist.	121 Jul 18 j 09:02	23° <del>☿</del> 08'57	10.21696 AU
retrograde	115 Aug 23 j 10:19	8° <del>♄</del> 42'45		morning rise	121 Aug 04 j 22:19	25° <del>☿</del> 22'18	
opposition	115 Oct 29 j 23:11	5° <del>♄</del> 12'37	-2°-31'-38		121 Sep 14 j 21:06	0° <del>♄</del>	
min. Earth dist.	115 Oct 29 j 19:43	5° <del>♄</del> 13'20	8.02362 AU	retrograde	121 Nov 14 j 20:11	3° <del>♄</del> 10'56	
direct	116 Jan 04 j 04:32	1° <del>♄</del> 45'26			122 Jan 17 j 15:56	30° <del>R</del> <del>☿</del>	
evening set	116 Apr 16 j 15:36	9° <del>♄</del> 55'58		opposition	122 Jan 20 j 12:43	29° <del>☿</del> 46'06	1°05'47
conjunction	116 May 04 j 14:28	12° <del>♄</del> 16'04	-1°-52'-28	min. Earth dist.	122 Jan 20 j 07:20	29° <del>☿</del> 47'11	8.27022 AU
minimum elong	116 May 04 j 14:32	12° <del>♄</del> 16'05	1°52'29	direct	122 Mar 30 j 02:14	26° <del>☿</del> 16'58	
max. Earth dist.	116 May 04 j 19:34	12° <del>♄</del> 17'44	10.00326 AU		122 Jun 06 j 08:02	0° <del>♄</del>	
morning rise	116 May 22 j 16:06	14° <del>♄</del> 37'02		evening set	122 Jul 14 j 09:04	4° <del>♄</del> 18'37	
	116 May 25 j 16:04	15° <del>♄</del>		conjunction	122 Aug 01 j 05:34	6° <del>♄</del> 32'45	1°07'44
retrograde	116 Sep 06 j 03:53	23° <del>♄</del> 01'21		minimum elong	122 Aug 01 j 05:31	6° <del>♄</del> 32'44	1°07'43
opposition	116 Nov 12 j 06:51	19° <del>♄</del> 31'21	-2°-7'00	max. Earth dist.	122 Aug 01 j 11:44	6° <del>♄</del> 34'41	10.32721 AU
min. Earth dist.	116 Nov 12 j 02:16	19° <del>♄</del> 32'18	7.99291 AU	morning rise	122 Aug 18 j 21:52	8° <del>♄</del> 45'32	
direct	117 Jan 17 j 14:47	16° <del>♄</del> 03'10			122 Oct 19 j 06:36	15° <del>♄</del>	
evening set	117 May 01 j 19:44	24° <del>♄</del> 17'47		retrograde	122 Nov 27 j 22:32	16° <del>♄</del> 24'17	
conjunction	117 May 19 j 22:09	26° <del>♄</del> 39'05	-1°-29'-18		123 Jan 07 j 09:09	15° <del>R</del> <del>♄</del>	
minimum elong	117 May 19 j 22:12	26° <del>♄</del> 39'07	1°29'18	opposition	123 Feb 02 j 22:37	13° <del>♄</del> 00'55	1°40'11
max. Earth dist.	117 May 20 j 05:04	26° <del>♄</del> 41'22	9.98811 AU	min. Earth dist.	123 Feb 02 j 18:02	13° <del>♄</del> 01'50	8.38633 AU
morning rise	117 Jun 07 j 01:59	29° <del>♄</del> 00'51		direct	123 Apr 13 j 03:47	9° <del>♄</del> 32'29	
	117 Jun 14 j 20:34	0° <del>II</del>		evening set	123 Jul 07 j 11:15	15° <del>♄</del>	
retrograde	117 Sep 20 j 19:10	7° <del>II</del> 22'07			123 Jul 28 j 07:31	17° <del>♄</del> 26'50	
opposition	117 Nov 26 j 14:35	3° <del>II</del> 52'36	-1°-34'-21	conjunction	123 Aug 14 j 23:04	19° <del>♄</del> 37'48	1°33'22



minimum elong	123 Aug 14 j 23:00	19°♏37'47	1°33'22	morning rise	129 Nov 11 j 08:27	3°♍33'49	
max. Earth dist.	123 Aug 15 j 03:40	19°♏39'14	10.44697 AU	retrograde	130 Feb 18 j 21:17	10°♍30'12	
morning rise	123 Sep 01 j 09:59	21°♏47'20		opposition	130 Apr 29 j 17:11	7°♍13'28	2°27'27
retrograde	123 Dec 10 j 18:26	29°♏16'43		min. Earth dist.	130 Apr 29 j 20:44	7°♍12'48	9.07174 AU
opposition	124 Feb 16 j 02:23	25°♏54'45	2°08'29	direct	130 Jul 10 j 01:50	3°♍53'24	
min. Earth dist.	124 Feb 15 j 22:22	25°♏55'32	8.50880 AU	evening set	130 Oct 20 j 14:22	10°♍58'40	
direct	124 Apr 25 j 20:58	22°♏27'18					
	124 Aug 07 j 21:32	0°♐		conjunction	130 Nov 06 j 04:28	12°♍54'45	1°53'21
evening set	124 Aug 09 j 19:06	0°♐13'41		minimum elong	130 Nov 06 j 04:30	12°♍54'46	1°53'20
				max. Earth dist.	130 Nov 05 j 23:26	12°♍53'17	11.08796 AU
conjunction	124 Aug 27 j 05:27	2°♐21'30	1°53'45	morning rise	130 Nov 22 j 16:27	14°♍50'17	
minimum elong	124 Aug 27 j 05:24	2°♐21'29	1°53'44		130 Nov 24 j 02:18	15°♍	
max. Earth dist.	124 Aug 27 j 09:00	2°♐22'36	10.56984 AU	retrograde	131 Mar 02 j 12:12	21°♍45'59	
morning rise	124 Sep 13 j 10:51	4°♐27'49		opposition	131 May 11 j 17:41	18°♍29'16	2°08'01
retrograde	124 Dec 22 j 07:31	11°♐48'39		min. Earth dist.	131 May 11 j 23:00	18°♍28'17	9.10089 AU
opposition	125 Feb 28 j 00:12	8°♐28'01	2°29'45	direct	131 Jul 22 j 00:06	15°♍10'03	
min. Earth dist.	125 Feb 27 j 21:05	8°♐28'38	8.63141 AU	evening set	131 Oct 31 j 21:19	22°♍11'47	
direct	125 May 09 j 06:01	5°♐01'45					
evening set	125 Aug 22 j 19:55	12°♐39'59		conjunction	131 Nov 17 j 10:35	24°♍07'30	1°35'26
				minimum elong	131 Nov 17 j 10:37	24°♍07'31	1°35'25
conjunction	125 Sep 09 j 01:14	14°♐44'50	2°08'16	max. Earth dist.	131 Nov 17 j 03:38	24°♍05'28	11.10557 AU
minimum elong	125 Sep 09 j 01:12	14°♐44'49	2°08'16	morning rise	131 Dec 03 j 22:48	26°♍02'57	
max. Earth dist.	125 Sep 09 j 03:47	14°♐45'36	10.68997 AU		132 Jan 10 j 20:08	0°♌	
morning rise	125 Sep 26 j 01:32	16°♐48'13		retrograde	132 Mar 13 j 05:24	2°♌59'32	
retrograde	126 Jan 03 j 13:21	24°♐01'32			132 May 18 j 18:28	30°♌	
opposition	126 Mar 12 j 16:28	20°♐42'07	2°43'35	opposition	132 May 22 j 18:01	29°♍42'31	1°43'48
min. Earth dist.	126 Mar 12 j 15:08	20°♐42'23	8.74854 AU	min. Earth dist.	132 May 23 j 00:18	29°♍41'22	9.10607 AU
direct	126 May 22 j 08:01	17°♐17'07		direct	132 Aug 01 j 21:12	26°♍23'57	
evening set	126 Sep 04 j 10:31	24°♐47'25			132 Oct 10 j 06:47	0°♌	
				evening set	132 Nov 11 j 02:31	3°♌23'25	
conjunction	126 Sep 21 j 11:11	26°♐49'35	2°16'43				
minimum elong	126 Sep 21 j 11:10	26°♐49'35	2°16'42	conjunction	132 Nov 27 j 15:47	5°♌19'15	1°13'53
max. Earth dist.	126 Sep 21 j 11:40	26°♐49'44	10.80203 AU	minimum elong	132 Nov 27 j 15:49	5°♌19'16	1°13'52
morning rise	126 Oct 08 j 07:16	28°♐50'26		max. Earth dist.	132 Nov 27 j 08:24	5°♌17'05	11.09887 AU
	126 Oct 18 j 07:19	0°♍		morning rise	132 Dec 14 j 04:47	7°♌15'03	
retrograde	127 Jan 15 j 14:25	5°♍57'28		retrograde	133 Mar 25 j 00:23	14°♌14'04	
opposition	127 Mar 25 j 03:55	2°♍39'06	2°49'55	opposition	133 Jun 03 j 18:57	10°♌56'27	1°15'36
min. Earth dist.	127 Mar 25 j 04:31	2°♍38'59	8.85503 AU	min. Earth dist.	133 Jun 04 j 01:21	10°♌55'17	9.08662 AU
	127 May 04 j 10:48	30°♌		direct	133 Aug 13 j 15:51	7°♌38'17	
direct	127 Jun 04 j 03:14	29°♐15'25		evening set	133 Nov 22 j 08:06	14°♌37'00	
	127 Jul 04 j 13:36	0°♍					
evening set	127 Sep 16 j 16:00	6°♍38'13		conjunction	133 Dec 08 j 21:57	16°♌33'22	0°49'25
				minimum elong	133 Dec 08 j 21:59	16°♌33'23	0°49'25
conjunction	127 Oct 03 j 12:40	8°♍38'09	2°19'07	max. Earth dist.	133 Dec 08 j 14:28	16°♌31'10	11.06738 AU
minimum elong	127 Oct 03 j 12:40	8°♍38'09	2°19'07	morning rise	133 Dec 25 j 12:10	18°♌29'56	
max. Earth dist.	127 Oct 03 j 10:47	8°♍37'35	10.90130 AU	retrograde	134 Apr 06 j 00:39	25°♌32'58	
morning rise	127 Oct 20 j 05:25	10°♍36'55		opposition	134 Jun 15 j 21:26	22°♌14'32	0°44'18
retrograde	128 Jan 27 j 09:44	17°♍38'58		min. Earth dist.	134 Jun 16 j 04:06	22°♌13'18	9.04245 AU
opposition	128 Apr 05 j 11:12	14°♍21'24	2°49'01	direct	134 Aug 25 j 10:32	18°♌56'30	
min. Earth dist.	128 Apr 05 j 13:02	14°♍21'04	8.94657 AU	evening set	134 Dec 03 j 15:51	25°♌56'05	
direct	128 Jun 15 j 16:16	10°♍59'02					
evening set	128 Sep 27 j 13:26	18°♍15'04		conjunction	134 Dec 20 j 06:32	27°♌53'24	0°22'50
				minimum elong	134 Dec 20 j 06:33	27°♌53'24	0°22'51
conjunction	128 Oct 14 j 07:05	20°♍13'12	2°15'44	max. Earth dist.	134 Dec 19 j 21:58	27°♌50'52	11.01155 AU
minimum elong	128 Oct 14 j 07:06	20°♍13'13	2°15'45	morning rise	135 Jan 05 j 22:33	29°♌51'11	
max. Earth dist.	128 Oct 14 j 03:54	20°♍12'16	10.98399 AU		135 Jan 07 j 05:02	0°♎	
morning rise	128 Oct 30 j 21:21	22°♍10'23		retrograde	135 Apr 18 j 05:15	6°♎59'50	
retrograde	129 Feb 07 j 03:48	29°♍08'55		opposition	135 Jun 28 j 03:04	3°♎40'21	0°10'52
opposition	129 Apr 17 j 15:20	25°♍51'53	2°41'20	min. Earth dist.	135 Jun 28 j 10:33	3°♎38'58	8.97488 AU
min. Earth dist.	129 Apr 17 j 17:43	25°♍51'26	9.01970 AU	direct	135 Sep 06 j 04:47	0°♎22'13	
direct	129 Jun 28 j 00:29	22°♍30'44		desc. node	135 Oct 25 j 15:36	2°♎20'13	
evening set	129 Oct 09 j 04:14	29°♍40'50		evening set	135 Dec 15 j 03:18	7°♎24'18	
	129 Oct 11 j 22:30	0°♏					
conjunction	129 Oct 25 j 19:48	1°♏37'43	2°06'59	conjunction	135 Dec 31 j 19:12	9°♎22'55	0°-5'-4
minimum elong	129 Oct 25 j 19:49	1°♏37'44	2°06'59	minimum elong	135 Dec 31 j 19:12	9°♎22'55	0°05'04
max. Earth dist.	129 Oct 25 j 16:10	1°♏36'39	11.04698 AU	behind sun begin	135 Dec 31 j 12:24	9°♎20'55	
				behind sun end	136 Jan 01 j 02:00	9°♎24'55	



max. Earth dist.	135 Dec 31 j 09:51	9°☾20'08	10.93361 AU		142 May 02 j 12:59	0°♊	
morning rise	136 Jan 17 j 13:28	11°☾22'16		retrograde	142 Jul 18 j 21:56	4°♊41'36	
retrograde	136 Apr 29 j 14:24	18°☾38'06		opposition	142 Sep 25 j 17:44	1°♊12'05	-2°-50'-40
opposition	136 Jul 09 j 12:37	15°☾17'20	0°-23'-35	min. Earth dist.	142 Sep 25 j 17:34	1°♊12'07	8.18766 AU
min. Earth dist.	136 Jul 09 j 20:18	15°☾15'54	8.88695 AU		142 Oct 10 j 22:19	30°♊	
direct	136 Sep 17 j 03:11	11°☾58'46		direct	142 Dec 01 j 09:59	27°♊47'12	
evening set	136 Dec 25 j 20:22	19°☾04'56			143 Jan 20 j 03:39	0°♊	
				evening set	143 Mar 12 j 23:07	5°♊40'57	
conjunction	137 Jan 11 j 14:00	21°☾05'13	0°-33'-5				
minimum elong	137 Jan 11 j 13:59	21°☾05'13	0°33'06	conjunction	143 Mar 30 j 11:18	7°♊55'53	-2°-17'-53
max. Earth dist.	137 Jan 11 j 05:22	21°☾02'37	10.83695 AU	minimum elong	143 Mar 30 j 11:18	7°♊55'53	2°17'53
morning rise	137 Jan 28 j 10:41	23°☾06'27		max. Earth dist.	143 Mar 30 j 13:06	7°♊56'28	10.13754 AU
	137 Apr 17 j 06:57	0°♊		morning rise	143 Apr 17 j 03:54	10°♊12'17	
retrograde	137 May 12 j 08:14	0°♊30'44		retrograde	143 Aug 02 j 11:21	18°♊32'13	
	137 Jun 06 j 16:03	30°♊		opposition	143 Oct 09 j 18:51	15°♊01'53	-2°-50'-18
opposition	137 Jul 22 j 02:39	27°☾08'29	0°-57'-49	min. Earth dist.	143 Oct 09 j 16:31	15°♊02'22	8.09568 AU
min. Earth dist.	137 Jul 22 j 09:29	27°☾07'11	8.78247 AU	direct	143 Dec 15 j 04:29	11°♊35'46	
direct	137 Sep 29 j 05:33	23°☾49'16		evening set	144 Mar 26 j 11:28	19°♊37'44	
	137 Dec 29 j 05:13	0°♊					
evening set	138 Jan 06 j 20:32	1°♊00'59		conjunction	144 Apr 13 j 04:14	21°♊55'12	-2°-13'-19
				minimum elong	144 Apr 13 j 04:16	21°♊55'13	2°13'19
conjunction	138 Jan 23 j 16:17	3°♊03'13	-1°00'-18	max. Earth dist.	144 Apr 13 j 08:28	21°♊56'35	10.05627 AU
minimum elong	138 Jan 23 j 16:15	3°♊03'12	1°00'19	morning rise	144 May 01 j 00:48	24°♊13'56	
max. Earth dist.	138 Jan 23 j 09:13	3°♊01'04	10.72565 AU		144 Jun 21 j 13:39	0°♊	
morning rise	138 Feb 09 j 15:31	5°♊06'36		retrograde	144 Aug 16 j 05:39	2°♊38'14	
retrograde	138 May 25 j 09:41	12°♊40'23			144 Oct 12 j 06:31	30°♊	
opposition	138 Aug 03 j 22:10	9°♊16'31	-1°-30'-22	opposition	144 Oct 22 j 23:59	29°♊07'28	-2°-39'-45
min. Earth dist.	138 Aug 04 j 03:21	9°♊15'31	8.66582 AU	min. Earth dist.	144 Oct 22 j 19:47	29°♊08'20	8.02656 AU
direct	138 Oct 11 j 11:37	5°♊56'28		direct	144 Dec 28 j 05:19	25°♊40'11	
evening set	139 Jan 19 j 05:13	13°♊15'03			145 Mar 09 j 13:11	0°♊	
	139 Feb 02 j 12:03	15°♊		evening set	145 Apr 10 j 08:08	3°♊49'01	
conjunction	139 Feb 05 j 03:14	15°♊19'30	-1°-25'-23	conjunction	145 Apr 28 j 05:19	6°♊08'37	-2°00'-39
minimum elong	139 Feb 05 j 03:12	15°♊19'29	1°25'25	minimum elong	145 Apr 28 j 05:22	6°♊08'38	2°00'39
max. Earth dist.	139 Feb 04 j 21:12	15°♊17'38	10.60449 AU	max. Earth dist.	145 Apr 28 j 11:28	6°♊10'38	10.00055 AU
morning rise	139 Feb 22 j 05:22	17°♊25'16		morning rise	145 May 16 j 05:28	8°♊29'13	
retrograde	139 Jun 07 j 19:21	25°♊09'14			145 Jul 15 j 08:13	15°♊	
opposition	139 Aug 16 j 23:47	21°♊43'46	-1°-59'-38	retrograde	145 Aug 31 j 00:51	16°♊54'50	
min. Earth dist.	139 Aug 17 j 03:42	21°♊43'00	8.54213 AU		145 Oct 17 j 06:53	15°♊	
direct	139 Oct 24 j 00:02	18°♊22'39		opposition	145 Nov 06 j 07:32	13°♊24'06	-2°-19'-12
evening set	140 Jan 31 j 23:44	25°♊49'17		min. Earth dist.	145 Nov 06 j 02:02	13°♊25'14	7.98489 AU
				direct	146 Jan 11 j 13:10	9°♊55'49	
conjunction	140 Feb 18 j 00:27	27°♊56'10	-1°-47'-1		146 Mar 30 j 14:46	15°♊	
minimum elong	140 Feb 18 j 00:24	27°♊56'10	1°47'03	evening set	146 Apr 25 j 10:45	18°♊09'39	
max. Earth dist.	140 Feb 17 j 19:21	27°♊54'35	10.47903 AU				
	140 Mar 05 j 15:04	0°♊		conjunction	146 May 13 j 11:44	20°♊30'45	-1°-40'-26
morning rise	140 Mar 06 j 05:52	0°♊04'32		minimum elong	146 May 13 j 11:48	20°♊30'46	1°40'27
retrograde	140 Jun 20 j 13:35	7°♊58'50		max. Earth dist.	146 May 13 j 19:12	20°♊33'12	9.97432 AU
opposition	140 Aug 29 j 07:37	4°♊31'50	-2°-23'-55	morning rise	146 May 31 j 14:44	22°♊52'30	
min. Earth dist.	140 Aug 29 j 10:32	4°♊31'16	8.41716 AU		146 Aug 08 j 04:58	0°♊	
direct	140 Nov 04 j 18:35	1°♊09'31		retrograde	146 Sep 14 j 18:13	1°♊16'20	
evening set	141 Feb 13 j 04:44	8°♊45'01			146 Oct 22 j 11:51	30°♊	
				opposition	146 Nov 20 j 15:58	27°♊46'04	-1°-49'-48
conjunction	141 Mar 02 j 08:44	10°♊54'31	-2°-3'-49	min. Earth dist.	146 Nov 20 j 09:48	27°♊47'21	7.97381 AU
minimum elong	141 Mar 02 j 08:41	10°♊54'30	2°03'50	direct	147 Jan 26 j 01:55	24°♊17'02	
max. Earth dist.	141 Mar 02 j 05:10	10°♊53'24	10.35521 AU		147 Apr 19 j 23:57	0°♊	
morning rise	141 Mar 19 j 17:43	13°♊05'35		evening set	147 May 10 j 16:31	2°♊33'35	
retrograde	141 Jul 04 j 14:26	21°♊09'48					
opposition	141 Sep 11 j 21:45	17°♊41'26	-2°-41'-28	conjunction	147 May 28 j 20:19	4°♊55'23	-1°-13'-55
min. Earth dist.	141 Sep 11 j 23:30	17°♊41'05	8.29691 AU	minimum elong	147 May 28 j 20:22	4°♊55'24	1°13'55
direct	141 Nov 17 j 22:07	14°♊17'50		max. Earth dist.	147 May 29 j 04:40	4°♊58'07	9.97953 AU
evening set	142 Feb 26 j 20:36	22°♊02'35		morning rise	147 Jun 16 j 00:54	7°♊17'25	
				retrograde	147 Sep 29 j 07:29	15°♊36'34	
conjunction	142 Mar 16 j 04:26	24°♊14'47	-2°-14'-29	opposition	147 Dec 04 j 23:22	12°♊07'10	-1°-13'-33
minimum elong	142 Mar 16 j 04:25	24°♊14'47	2°14'29	min. Earth dist.	147 Dec 04 j 16:43	12°♊08'33	7.99424 AU
max. Earth dist.	142 Mar 16 j 03:27	24°♊14'29	10.23921 AU	direct	148 Feb 09 j 17:28	8°♊37'40	
morning rise	142 Apr 02 j 17:08	26°♊28'34		evening set	148 May 24 j 22:44	16°♊54'35	



conjunction	148 Jun 12 j 03:47	19°II16'08	0°-42'-55	evening set	154 Aug 17 j 16:02	7°♎36'48	
minimum elong	148 Jun 12 j 03:49	19°II16'08	0°42'55				
max. Earth dist.	148 Jun 12 j 12:42	19°II19'02	10.01588 AU	conjunction	154 Sep 03 j 23:23	9°♎42'51	2°02'39
morning rise	148 Jun 30 j 08:17	21°II37'26		minimum elong	154 Sep 03 j 23:20	9°♎42'51	2°02'38
retrograde	148 Oct 12 j 14:41	29°II49'31		max. Earth dist.	154 Sep 04 j 01:12	9°♎43'25	10.64638 AU
opposition	148 Dec 18 j 03:57	26°II21'20	0°-33'-4	morning rise	154 Sep 21 j 01:59	11°♎47'27	
min. Earth dist.	148 Dec 17 j 20:52	26°II22'48	8.04496 AU	retrograde	154 Dec 29 j 17:02	19°♎03'55	
direct	149 Feb 23 j 08:30	22°II51'41		opposition	155 Mar 07 j 15:48	15°♎44'26	2°38'24
	149 May 31 j 04:59	0°♊		min. Earth dist.	155 Mar 07 j 14:32	15°♎44'41	8.70587 AU
evening set	149 Jun 09 j 02:05	1°♊06'37		direct	155 May 17 j 03:29	12°♎19'16	
				evening set	155 Aug 30 j 11:31	19°♎53'06	
conjunction	149 Jun 27 j 06:38	3°♊26'57	0°-9'-38				
minimum elong	149 Jun 27 j 06:38	3°♊26'57	0°09'39	conjunction	155 Sep 16 j 14:05	21°♎56'22	2°13'43
behind sun begin	149 Jun 27 j 00:38	3°♊25'01		minimum elong	155 Sep 16 j 14:03	21°♎56'21	2°13'42
behind sun end	149 Jun 27 j 12:39	3°♊28'52		max. Earth dist.	155 Sep 16 j 13:56	21°♎56'19	10.76049 AU
max. Earth dist.	149 Jun 27 j 15:51	3°♊29'55	10.08100 AU	morning rise	155 Oct 03 j 12:02	23°♎58'15	
morning rise	149 Jul 15 j 09:17	5°♊46'36			155 Dec 05 j 12:13	0°♊	
asc. node	149 Oct 13 j 17:23	13°♊40'28		retrograde	156 Jan 10 j 21:20	1°♊08'01	
retrograde	149 Oct 26 j 15:55	13°♊49'56			156 Feb 17 j 01:30	30°♎	
opposition	150 Jan 01 j 04:31	10°♊23'09	0°08'45	opposition	156 Mar 19 j 05:38	27°♎49'34	2°47'56
min. Earth dist.	149 Dec 31 j 20:57	10°♊24'42	8.12269 AU	min. Earth dist.	156 Mar 19 j 05:34	27°♎49'35	8.81450 AU
direct	150 Mar 09 j 21:37	6°♊53'41		direct	156 May 29 j 02:27	24°♎25'39	
evening set	150 Jun 23 j 23:34	15°♊04'30			156 Aug 25 j 12:24	0°♊	
				evening set	156 Sep 10 j 21:13	1°♊51'50	
conjunction	150 Jul 12 j 01:56	17°♊22'45	0°23'46				
minimum elong	150 Jul 12 j 01:54	17°♊22'45	0°23'46	conjunction	156 Sep 27 j 19:40	3°♊52'44	2°18'41
max. Earth dist.	150 Jul 12 j 11:15	17°♊25'44	10.17059 AU	minimum elong	156 Sep 27 j 19:40	3°♊52'44	2°18'41
morning rise	150 Jul 30 j 01:08	19°♊39'59		max. Earth dist.	156 Sep 27 j 18:22	3°♊52'20	10.86211 AU
retrograde	150 Nov 09 j 09:01	27°♊33'33		morning rise	156 Oct 14 j 13:42	5°♊52'21	
opposition	151 Jan 14 j 23:48	24°♊08'18	0°49'10	retrograde	157 Jan 21 j 20:10	12°♊56'42	
min. Earth dist.	151 Jan 14 j 16:13	24°♊09'51	8.22236 AU	opposition	157 Mar 31 j 15:11	9°♊39'02	2°50'07
direct	151 Mar 24 j 06:46	20°♊39'18		min. Earth dist.	157 Mar 31 j 16:43	9°♊38'45	8.90878 AU
evening set	151 Jul 08 j 13:13	28°♊44'18		direct	157 Jun 10 j 17:22	6°♊16'18	
	151 Jul 18 j 14:56	0°♋		evening set	157 Sep 22 j 22:31	13°♊35'28	
conjunction	151 Jul 26 j 11:55	0°♋59'49	0°55'06	conjunction	157 Oct 09 j 17:32	15°♊34'25	2°17'44
minimum elong	151 Jul 26 j 11:52	0°♋59'48	0°55'06	minimum elong	157 Oct 09 j 17:33	15°♊34'25	2°17'45
max. Earth dist.	151 Jul 26 j 20:48	1°♋02'38	10.27884 AU	max. Earth dist.	157 Oct 09 j 14:33	15°♊33'32	10.94788 AU
morning rise	151 Aug 13 j 06:26	3°♋14'03		morning rise	157 Oct 26 j 08:41	17°♊32'17	
retrograde	151 Nov 22 j 17:25	10°♋57'31		retrograde	158 Feb 02 j 15:05	24°♊32'31	
opposition	152 Jan 28 j 13:05	7°♋33'51	1°25'50	opposition	158 Apr 12 j 21:00	21°♊15'22	2°45'17
min. Earth dist.	152 Jan 28 j 06:33	7°♋35'10	8.33765 AU	min. Earth dist.	158 Apr 13 j 00:44	21°♊14'40	8.98558 AU
direct	152 Apr 06 j 10:19	4°♋05'33		direct	158 Jun 23 j 03:47	17°♊53'41	
evening set	152 Jul 21 j 17:07	12°♋03'26		evening set	158 Oct 04 j 16:36	25°♊06'40	
conjunction	152 Aug 08 j 11:03	14°♋15'50	1°22'46	conjunction	158 Oct 21 j 08:58	27°♊04'08	2°11'13
minimum elong	152 Aug 08 j 11:00	14°♋15'49	1°22'46	minimum elong	158 Oct 21 j 09:00	27°♊04'09	2°11'14
max. Earth dist.	152 Aug 08 j 18:24	14°♋18'08	10.39903 AU	max. Earth dist.	158 Oct 21 j 03:33	27°♊02'32	11.01492 AU
	152 Aug 14 j 08:11	15°♋		morning rise	158 Nov 06 j 22:22	29°♊00'46	
morning rise	152 Aug 26 j 00:13	16°♋26'47			158 Nov 15 j 14:00	0°♌	
retrograde	152 Dec 04 j 17:45	24°♋00'23		retrograde	159 Feb 14 j 07:42	5°♌58'17	
opposition	153 Feb 09 j 20:13	20°♋38'15	1°56'56	opposition	159 Apr 25 j 00:08	2°♌41'21	2°33'59
min. Earth dist.	153 Feb 09 j 15:26	20°♋39'12	8.46152 AU	min. Earth dist.	159 Apr 25 j 05:09	2°♌40'25	9.04222 AU
direct	153 Apr 20 j 06:41	17°♋10'50			159 Jun 06 j 06:49	30°♌	
evening set	153 Aug 04 j 10:02	25°♋00'47		direct	159 Jul 05 j 08:46	29°♊20'36	
					159 Aug 03 j 02:31	0°♌	
conjunction	153 Aug 21 j 22:38	27°♋09'57	1°45'33	evening set	159 Oct 16 j 04:54	6°♌28'21	
minimum elong	153 Aug 21 j 22:35	27°♋09'56	1°45'32				
max. Earth dist.	153 Aug 22 j 03:29	27°♋11'27	10.52394 AU	conjunction	159 Nov 01 j 19:31	8°♌24'51	1°59'36
morning rise	153 Sep 08 j 06:22	29°♋17'37		minimum elong	159 Nov 01 j 19:33	8°♌24'52	1°59'36
	153 Sep 14 j 03:42	0°♎		max. Earth dist.	159 Nov 01 j 13:05	8°♌22'57	11.06092 AU
retrograde	153 Dec 17 j 09:11	6°♎42'06		morning rise	159 Nov 18 j 07:55	10°♌20'44	
opposition	154 Feb 22 j 21:02	3°♎21'22	2°21'20		160 Jan 03 j 07:44	15°♌	
min. Earth dist.	154 Feb 22 j 18:16	3°♎21'54	8.58655 AU	retrograde	160 Feb 25 j 23:12	17°♌17'03	
	154 Apr 23 j 22:43	30°♎♌			160 Apr 22 j 07:00	15°♎♌	
direct	154 May 03 j 20:34	29°♋55'00		opposition	160 May 06 j 01:27	14°♌00'02	2°16'49
	154 May 13 j 19:09	0°♎		min. Earth dist.	160 May 06 j 06:50	13°♌59'02	9.07680 AU



direct	160 Jul 16 j 10:27	10° $\mathbb{M}$ 40'04		min. Earth dist.	166 Jul 17 j 11:01	22° $\mathfrak{Z}$ 24'51	8.81469 AU
	160 Oct 01 j 12:00	15° $\mathbb{M}$		direct	166 Sep 24 j 12:46	19° $\mathfrak{Z}$ 06'42	
evening set	160 Oct 26 j 13:07	17° $\mathbb{M}$ 43'45		evening set	167 Jan 02 j 05:06	26° $\mathfrak{Z}$ 16'25	
conjunction	160 Nov 12 j 02:53	19° $\mathbb{M}$ 39'45	1°43'26	conjunction	167 Jan 18 j 23:48	28° $\mathfrak{Z}$ 17'55	0°-49'-8
minimum elong	160 Nov 12 j 02:56	19° $\mathbb{M}$ 39'46	1°43'25	minimum elong	167 Jan 18 j 23:46	28° $\mathfrak{Z}$ 17'55	0°49'10
max. Earth dist.	160 Nov 11 j 20:23	19° $\mathbb{M}$ 37'51	11.08436 AU	max. Earth dist.	167 Jan 18 j 16:25	28° $\mathfrak{Z}$ 15'41	10.76287 AU
morning rise	160 Nov 28 j 14:58	21° $\mathbb{M}$ 35'21			167 Feb 02 j 01:21	0° $\approx$	
retrograde	161 Mar 08 j 17:15	28° $\mathbb{M}$ 31'58		morning rise	167 Feb 04 j 22:00	0° $\approx$ 20'30	
opposition	161 May 18 j 01:56	25° $\mathbb{M}$ 14'37	1°54'32	retrograde	167 May 20 j 07:38	7° $\approx$ 50'34	
min. Earth dist.	161 May 18 j 07:45	25° $\mathbb{M}$ 13'33	9.08832 AU	opposition	167 Jul 29 j 22:54	4° $\approx$ 27'12	-1°-17'-7
direct	161 Jul 28 j 07:54	21° $\mathbb{M}$ 55'17		min. Earth dist.	167 Jul 30 j 04:15	4° $\approx$ 26'11	8.70757 AU
evening set	161 Nov 06 j 19:04	28° $\mathbb{M}$ 56'11		direct	167 Oct 06 j 16:47	1° $\approx$ 07'23	
	161 Nov 15 j 22:51	0° $\mathfrak{A}$		evening set	168 Jan 14 j 10:11	8° $\approx$ 23'21	
conjunction	161 Nov 23 j 08:30	0° $\mathfrak{A}$ 52'09	1°23'19	conjunction	168 Jan 31 j 07:06	10° $\approx$ 26'55	-1°-15'-16
minimum elong	161 Nov 23 j 08:33	0° $\mathfrak{A}$ 52'09	1°23'19	minimum elong	168 Jan 31 j 07:03	10° $\approx$ 26'54	1°15'17
max. Earth dist.	161 Nov 23 j 01:09	0° $\mathfrak{A}$ 49'59	11.08455 AU	max. Earth dist.	168 Jan 31 j 01:04	10° $\approx$ 25'04	10.65050 AU
morning rise	161 Dec 09 j 21:07	2° $\mathfrak{A}$ 47'57		morning rise	168 Feb 17 j 08:07	12° $\approx$ 31'45	
retrograde	162 Mar 20 j 10:58	9° $\mathfrak{A}$ 46'22			168 Mar 09 j 17:19	15° $\approx$	
opposition	162 May 30 j 02:43	6° $\mathfrak{A}$ 28'29	1°27'54	retrograde	168 Jun 01 j 13:08	20° $\approx$ 11'41	
min. Earth dist.	162 May 30 j 09:39	6° $\mathfrak{A}$ 27'12	9.07646 AU	opposition	168 Aug 10 j 22:15	16° $\approx$ 46'53	-1°-47'-56
direct	162 Aug 09 j 01:41	3° $\mathfrak{A}$ 09'34		min. Earth dist.	168 Aug 11 j 02:26	16° $\approx$ 46'05	8.59157 AU
evening set	162 Nov 18 j 00:36	10° $\mathfrak{A}$ 09'11			168 Sep 04 j 07:32	15° $\mathfrak{R}$ $\approx$	
conjunction	162 Dec 04 j 14:09	12° $\mathfrak{A}$ 05'30	0°59'59	direct	168 Oct 18 j 04:01	13° $\approx$ 26'17	
minimum elong	162 Dec 04 j 14:11	12° $\mathfrak{A}$ 05'30	0°59'58		168 Nov 29 j 15:12	15° $\approx$	
max. Earth dist.	162 Dec 04 j 05:33	12° $\mathfrak{A}$ 02'58	11.06149 AU	evening set	169 Jan 26 j 00:43	20° $\approx$ 49'43	
morning rise	162 Dec 21 j 03:58	14° $\mathfrak{A}$ 01'56		conjunction	169 Feb 12 j 00:19	22° $\approx$ 55'36	-1°-38'-29
retrograde	163 Apr 01 j 08:16	21° $\mathfrak{A}$ 03'46		minimum elong	169 Feb 12 j 00:17	22° $\approx$ 55'35	1°38'31
opposition	163 Jun 11 j 04:48	17° $\mathfrak{A}$ 45'07	0°57'45	max. Earth dist.	169 Feb 11 j 20:29	22° $\approx$ 54'25	10.53156 AU
min. Earth dist.	163 Jun 11 j 12:20	17° $\mathfrak{A}$ 43'44	9.04162 AU	morning rise	169 Mar 01 j 04:18	25° $\approx$ 02'53	
direct	163 Aug 20 j 21:33	14° $\mathfrak{A}$ 26'25			169 Apr 15 j 20:01	0° $\mathfrak{H}$	
evening set	163 Nov 29 j 07:21	21° $\mathfrak{A}$ 26'15		retrograde	169 Jun 15 j 04:30	2° $\mathfrak{H}$ 53'02	
conjunction	163 Dec 15 j 21:40	23° $\mathfrak{A}$ 23'21	0°34'10		169 Aug 17 j 00:55	30° $\mathfrak{R}$ $\approx$	
minimum elong	163 Dec 15 j 21:41	23° $\mathfrak{A}$ 23'21	0°34'10	opposition	169 Aug 24 j 03:36	29° $\approx$ 26'52	-2°-14'-28
max. Earth dist.	163 Dec 15 j 13:07	23° $\mathfrak{A}$ 20'49	11.01595 AU	min. Earth dist.	169 Aug 24 j 05:53	29° $\approx$ 26'25	8.47185 AU
morning rise	164 Jan 01 j 13:04	25° $\mathfrak{A}$ 20'48		direct	169 Oct 30 j 20:28	26° $\approx$ 05'20	
	164 Feb 16 j 01:27	0° $\mathfrak{Z}$			170 Jan 07 j 13:15	0° $\mathfrak{H}$	
retrograde	164 Apr 12 j 10:24	2° $\mathfrak{Z}$ 27'37		evening set	170 Feb 08 j 01:35	3° $\mathfrak{H}$ 37'10	
	164 Jun 10 j 13:07	30° $\mathfrak{R}$ $\mathfrak{A}$		conjunction	170 Feb 25 j 04:13	5° $\mathfrak{H}$ 45'32	-1°-57'-26
opposition	164 Jun 22 j 09:17	29° $\mathfrak{A}$ 08'00	0°25'02	minimum elong	170 Feb 25 j 04:11	5° $\mathfrak{H}$ 45'31	1°57'27
min. Earth dist.	164 Jun 22 j 16:15	29° $\mathfrak{A}$ 06'42	8.98501 AU	max. Earth dist.	170 Feb 25 j 02:28	5° $\mathfrak{H}$ 44'59	10.41163 AU
direct	164 Aug 31 j 16:41	25° $\mathfrak{A}$ 49'21		morning rise	170 Mar 14 j 11:27	7° $\mathfrak{H}$ 55'25	
	164 Nov 13 j 20:39	0° $\mathfrak{Z}$		retrograde	170 Jun 29 j 03:50	15° $\mathfrak{H}$ 55'34	
evening set	164 Dec 09 j 17:04	2° $\mathfrak{Z}$ 50'54		opposition	170 Sep 06 j 15:25	12° $\mathfrak{H}$ 28'07	-2°-34'-56
conjunction	164 Dec 26 j 08:40	4° $\mathfrak{Z}$ 49'08	0°06'45	min. Earth dist.	170 Sep 06 j 15:45	12° $\mathfrak{H}$ 28'03	8.35419 AU
minimum elong	164 Dec 26 j 08:40	4° $\mathfrak{Z}$ 49'08	0°06'46	direct	170 Nov 12 j 19:38	9° $\mathfrak{H}$ 05'32	
behind sun begin	164 Dec 26 j 02:08	4° $\mathfrak{Z}$ 47'13		evening set	171 Feb 21 j 13:06	16° $\mathfrak{H}$ 46'15	
behind sun end	164 Dec 26 j 15:11	4° $\mathfrak{Z}$ 51'04		conjunction	171 Mar 10 j 19:12	18° $\mathfrak{H}$ 57'13	-2°-10'-45
max. Earth dist.	164 Dec 26 j 01:08	4° $\mathfrak{Z}$ 46'55	10.94931 AU	minimum elong	171 Mar 10 j 19:10	18° $\mathfrak{H}$ 57'13	2°10'46
morning rise	165 Jan 12 j 01:56	6° $\mathfrak{Z}$ 47'59		max. Earth dist.	171 Mar 10 j 19:03	18° $\mathfrak{H}$ 57'11	10.29681 AU
desc. node	165 Mar 26 j 09:35	13° $\mathfrak{Z}$ 19'28		morning rise	171 Mar 28 j 06:07	21° $\mathfrak{H}$ 09'45	
retrograde	165 Apr 24 j 18:32	14° $\mathfrak{Z}$ 01'16		retrograde	171 Jul 13 j 09:39	29° $\mathfrak{H}$ 19'03	
opposition	165 Jul 04 j 17:09	10° $\mathfrak{Z}$ 40'31	0°-9'-10	opposition	171 Sep 20 j 09:21	25° $\mathfrak{H}$ 50'28	-2°-47'-42
min. Earth dist.	165 Jul 04 j 23:12	10° $\mathfrak{Z}$ 39'23	8.90843 AU	min. Earth dist.	171 Sep 20 j 08:13	25° $\mathfrak{H}$ 50'42	8.24459 AU
direct	165 Sep 12 j 13:27	7° $\mathfrak{Z}$ 21'42		direct	171 Nov 26 j 03:30	22° $\mathfrak{H}$ 26'43	
evening set	165 Dec 21 j 07:50	14° $\mathfrak{Z}$ 26'33			172 Mar 04 j 07:30	0° $\mathfrak{Y}$	
conjunction	166 Jan 07 j 00:51	16° $\mathfrak{Z}$ 26'17	0°-21'-26	evening set	172 Mar 06 j 11:30	0° $\mathfrak{Y}$ 16'20	
minimum elong	166 Jan 07 j 00:50	16° $\mathfrak{Z}$ 26'17	0°21'27	conjunction	172 Mar 23 j 21:35	2° $\mathfrak{Y}$ 29'57	-2°-17'-14
max. Earth dist.	166 Jan 06 j 17:26	16° $\mathfrak{Z}$ 24'04	10.86384 AU	minimum elong	172 Mar 23 j 21:35	2° $\mathfrak{Y}$ 29'57	2°17'14
morning rise	166 Jan 23 j 20:24	18° $\mathfrak{Z}$ 26'50		max. Earth dist.	172 Mar 23 j 22:43	2° $\mathfrak{Y}$ 30'19	10.19309 AU
retrograde	166 May 07 j 10:23	25° $\mathfrak{Z}$ 47'55		morning rise	172 Apr 10 j 12:29	4° $\mathfrak{Y}$ 45'06	
opposition	166 Jul 17 j 05:18	22° $\mathfrak{Z}$ 25'55	0°-43'-40	retrograde	172 Jul 26 j 21:10	13° $\mathfrak{Y}$ 01'50	



opposition	172 Oct 03 j 08:26	9°Υ32'23	-2°-51'-22	asc. node	179 Mar 14 j 23:56	1°♄24'32	
min. Earth dist.	172 Oct 03 j 06:32	9°Υ32'46	8.14870 AU	evening set	179 Jun 18 j 04:00	9°♄30'29	
direct	172 Dec 08 j 19:05	6°Υ07'23					
evening set	173 Mar 20 j 19:52	14°Υ05'22		conjunction	179 Jul 06 j 07:27	11°♄49'37	0°10'01
				minimum elong	179 Jul 06 j 07:26	11°♄49'37	0°10'01
conjunction	173 Apr 07 j 10:23	16°Υ21'32	-2°-16'00	behind sun begin	179 Jul 06 j 01:34	11°♄47'45	
minimum elong	173 Apr 07 j 10:25	16°Υ21'33	2°16'00	behind sun end	179 Jul 06 j 13:17	11°♄51'29	
max. Earth dist.	173 Apr 07 j 12:59	16°Υ22'23	10.10575 AU	max. Earth dist.	179 Jul 06 j 16:00	11°♄52'22	10.13335 AU
morning rise	173 Apr 25 j 05:20	18°Υ39'06		morning rise	179 Jul 24 j 08:13	14°♄07'53	
retrograde	173 Aug 10 j 12:59	27°Υ01'04		retrograde	179 Nov 04 j 01:48	22°♄05'17	
opposition	173 Oct 17 j 11:54	23°Υ31'05	-2°-45'-2	opposition	180 Jan 09 j 14:59	18°♄39'17	0°32'37
min. Earth dist.	173 Oct 17 j 09:10	23°Υ31'39	8.07127 AU	min. Earth dist.	180 Jan 09 j 08:56	18°♄40'31	8.17927 AU
direct	173 Dec 22 j 18:05	20°Υ04'52		direct	180 Mar 17 j 16:17	15°♄09'50	
evening set	174 Apr 04 j 12:49	28°Υ10'13		evening set	180 Jul 01 j 20:46	23°♄17'09	
	174 Apr 18 j 16:02	0°♄					
				conjunction	180 Jul 19 j 21:02	25°♄33'50	0°42'20
conjunction	174 Apr 22 j 07:55	0°♄28'42	-2°-6'-40	minimum elong	180 Jul 19 j 20:59	25°♄33'49	0°42'21
minimum elong	174 Apr 22 j 07:58	0°♄28'43	2°06'40	max. Earth dist.	180 Jul 20 j 04:17	25°♄36'08	10.23048 AU
max. Earth dist.	174 Apr 22 j 12:12	0°♄30'06	10.03935 AU	morning rise	180 Aug 06 j 17:44	27°♄49'21	
morning rise	174 May 10 j 06:38	2°♄48'20			180 Aug 24 j 18:45	0°♄	
retrograde	174 Aug 25 j 06:39	11°♄12'57		retrograde	180 Nov 16 j 11:57	5°♄36'50	
opposition	174 Oct 31 j 18:25	7°♄42'48	-2°-28'-34	opposition	181 Jan 22 j 06:24	2°♄12'15	1°11'02
min. Earth dist.	174 Oct 31 j 14:28	7°♄43'37	8.01697 AU	min. Earth dist.	181 Jan 22 j 00:51	2°♄13'22	8.28487 AU
direct	175 Jan 06 j 00:22	4°♄15'31			181 Feb 20 j 22:14	30°♄	
evening set	175 Apr 19 j 12:50	12°♄26'43		direct	181 Mar 31 j 22:54	28°♄43'16	
					181 May 09 j 16:09	0°♄	
conjunction	175 May 07 j 12:14	14°♄47'02	-1°-49'-29	evening set	181 Jul 16 j 04:19	6°♄44'05	
minimum elong	175 May 07 j 12:18	14°♄47'03	1°49'30				
max. Earth dist.	175 May 07 j 18:28	14°♄49'04	9.99875 AU	conjunction	181 Aug 03 j 00:15	8°♄57'49	1°11'40
	175 May 09 j 03:50	15°♄		minimum elong	181 Aug 03 j 00:12	8°♄57'48	1°11'41
morning rise	175 May 25 j 14:07	17°♄08'09		max. Earth dist.	181 Aug 03 j 06:20	8°♄59'43	10.34276 AU
retrograde	175 Sep 08 j 23:57	25°♄32'26		morning rise	181 Aug 20 j 15:57	11°♄10'11	
opposition	175 Nov 15 j 02:19	22°♄02'28	-2°-2'-42		181 Sep 23 j 04:15	15°♄	
min. Earth dist.	175 Nov 14 j 20:53	22°♄03'36	7.99045 AU	retrograde	181 Nov 29 j 14:41	18°♄47'48	
direct	176 Jan 20 j 11:08	18°♄34'16		opposition	182 Feb 04 j 15:36	15°♄24'38	1°44'37
evening set	176 May 03 j 17:27	26°♄49'16		min. Earth dist.	182 Feb 04 j 10:25	15°♄25'40	8.40260 AU
					182 Feb 09 j 19:28	15°♄	
conjunction	176 May 21 j 20:17	29°♄10'41	-1°-25'-26	direct	182 Apr 14 j 22:08	11°♄56'24	
minimum elong	176 May 21 j 20:20	29°♄10'43	1°25'27		182 Jun 15 j 20:53	15°♄	
max. Earth dist.	176 May 22 j 04:16	29°♄13'19	9.98776 AU	evening set	182 Jul 30 j 01:19	19°♄49'40	
	176 May 28 j 02:51	0°♄					
morning rise	176 Jun 09 j 00:14	1°♄32'30		conjunction	182 Aug 16 j 16:20	22°♄00'15	1°36'35
retrograde	176 Sep 22 j 15:05	9°♄53'24		minimum elong	182 Aug 16 j 16:17	22°♄00'14	1°36'35
opposition	176 Nov 28 j 10:03	6°♄24'00	-1°-29'-6	max. Earth dist.	182 Aug 16 j 21:32	22°♄01'52	10.46371 AU
min. Earth dist.	176 Nov 28 j 03:26	6°♄25'23	7.99441 AU	morning rise	182 Sep 03 j 02:33	24°♄09'21	
direct	177 Feb 03 j 00:39	2°♄55'05			182 Oct 30 j 07:20	0°♄	
evening set	177 May 18 j 23:34	11°♄11'31		retrograde	182 Dec 12 j 10:20	1°♄37'36	
					183 Jan 25 j 13:59	30°♄	
conjunction	177 Jun 06 j 04:19	13°♄33'08	0°-56'-6	opposition	183 Feb 17 j 18:31	28°♄15'49	2°11'55
minimum elong	177 Jun 06 j 04:22	13°♄33'08	0°56'06	min. Earth dist.	183 Feb 17 j 14:13	28°♄16'39	8.52583 AU
max. Earth dist.	177 Jun 06 j 13:23	13°♄36'05	10.00768 AU	direct	183 Apr 28 j 13:42	24°♄48'32	
morning rise	177 Jun 24 j 08:49	15°♄54'40			183 Jul 21 j 06:19	0°♄	
retrograde	177 Oct 07 j 01:50	24°♄09'33		evening set	183 Aug 12 j 11:36	2°♄33'46	
opposition	177 Dec 12 j 15:45	20°♄41'03	0°-50'-8				
min. Earth dist.	177 Dec 12 j 08:43	20°♄42'30	8.02903 AU	conjunction	183 Aug 29 j 21:24	4°♄41'12	1°56'08
direct	178 Feb 17 j 14:34	17°♄11'39		minimum elong	183 Aug 29 j 21:20	4°♄41'11	1°56'07
evening set	178 Jun 03 j 04:04	25°♄27'07		max. Earth dist.	183 Aug 30 j 01:26	4°♄42'26	10.58690 AU
				morning rise	183 Sep 16 j 02:06	6°♄47'06	
conjunction	178 Jun 21 j 09:04	27°♄47'58	0°-23'-33	retrograde	183 Dec 24 j 21:18	14°♄06'49	
minimum elong	178 Jun 21 j 09:05	27°♄47'58	0°23'34	opposition	184 Mar 01 j 15:27	10°♄46'21	2°32'07
max. Earth dist.	178 Jun 21 j 18:19	27°♄50'57	10.05736 AU	min. Earth dist.	184 Mar 01 j 12:49	10°♄46'52	8.64836 AU
	178 Jul 08 j 10:25	0°♄		direct	184 May 10 j 22:40	7°♄20'13	
morning rise	178 Jul 09 j 12:29	0°♄08'17		evening set	184 Aug 24 j 11:06	14°♄57'17	
retrograde	178 Oct 21 j 06:32	8°♄15'05					
opposition	178 Dec 26 j 17:47	4°♄47'44	0°-8'-37	conjunction	184 Sep 10 j 15:47	17°♄01'44	2°09'46
min. Earth dist.	178 Dec 26 j 11:02	4°♄49'07	8.09210 AU	minimum elong	184 Sep 10 j 15:45	17°♄01'43	2°09'45
direct	179 Mar 04 j 04:34	1°♄18'09		max. Earth dist.	184 Sep 10 j 17:57	17°♄02'23	10.70651 AU



morning rise	184 Sep 27 j 15:34	19° $\mathring{M}$ 04'44		retrograde	191 Mar 15 j 15:19	5° $\mathring{Z}$ 05'11	
retrograde	185 Jan 05 j 02:40	26° $\mathring{M}$ 17'02		opposition	191 May 25 j 05:08	1° $\mathring{Z}$ 48'06	1°39'54
opposition	185 Mar 14 j 06:59	22° $\mathring{M}$ 57'44	2°44'50	min. Earth dist.	191 May 25 j 11:08	1° $\mathring{Z}$ 47'00	9.10644 AU
min. Earth dist.	185 Mar 14 j 06:18	22° $\mathring{M}$ 57'52	8.76463 AU		191 Jun 20 j 04:52	30° $\mathring{R}$ $\mathring{M}$	
direct	185 May 23 j 23:49	19° $\mathring{M}$ 32'52		direct	191 Aug 04 j 08:01	28° $\mathring{M}$ 29'34	
evening set	185 Sep 06 j 00:16	27° $\mathring{M}$ 01'58		evening set	191 Sep 17 j 02:08	0° $\mathring{Z}$	
					191 Nov 13 j 11:45	5° $\mathring{Z}$ 28'48	
conjunction	185 Sep 23 j 00:22	29° $\mathring{M}$ 03'47	2°17'19				
minimum elong	185 Sep 23 j 00:21	29° $\mathring{M}$ 03'47	2°17'18	conjunction	191 Nov 30 j 01:11	7° $\mathring{Z}$ 24'40	1°10'29
max. Earth dist.	185 Sep 22 j 23:59	29° $\mathring{M}$ 03'40	10.81737 AU	minimum elong	191 Nov 30 j 01:13	7° $\mathring{Z}$ 24'41	1°10'29
	185 Sep 30 j 19:39	0° $\mathring{Z}$		max. Earth dist.	191 Nov 29 j 18:15	7° $\mathring{Z}$ 22'38	11.09775 AU
morning rise	185 Oct 09 j 20:05	1° $\mathring{Z}$ 04'19		morning rise	191 Dec 16 j 14:14	9° $\mathring{Z}$ 20'31	
retrograde	186 Jan 17 j 01:23	8° $\mathring{Z}$ 10'25		retrograde	192 Mar 26 j 12:28	16° $\mathring{Z}$ 19'47	
opposition	186 Mar 26 j 17:33	4° $\mathring{Z}$ 52'07	2°50'05	opposition	192 Jun 05 j 06:09	13° $\mathring{Z}$ 02'06	1°11'15
min. Earth dist.	186 Mar 26 j 18:12	4° $\mathring{Z}$ 51'59	8.86959 AU	min. Earth dist.	192 Jun 05 j 12:20	13° $\mathring{Z}$ 00'57	9.08401 AU
direct	186 Jun 05 j 17:44	1° $\mathring{Z}$ 28'32		direct	192 Aug 15 j 02:57	9° $\mathring{Z}$ 43'58	
evening set	186 Sep 18 j 04:26	8° $\mathring{Z}$ 50'13		evening set	192 Nov 23 j 17:29	16° $\mathring{Z}$ 42'37	
conjunction	186 Oct 05 j 00:46	10° $\mathring{Z}$ 49'51	2°18'51	conjunction	192 Dec 10 j 07:24	18° $\mathring{Z}$ 39'05	0°45'43
minimum elong	186 Oct 05 j 00:46	10° $\mathring{Z}$ 49'51	2°18'51	minimum elong	192 Dec 10 j 07:25	18° $\mathring{Z}$ 39'05	0°45'43
max. Earth dist.	186 Oct 04 j 22:42	10° $\mathring{Z}$ 49'14	10.91485 AU	max. Earth dist.	192 Dec 09 j 23:37	18° $\mathring{Z}$ 36'48	11.06355 AU
morning rise	186 Oct 21 j 17:14	12° $\mathring{Z}$ 48'21		morning rise	192 Dec 26 j 21:48	20° $\mathring{Z}$ 35'45	
retrograde	187 Jan 28 j 21:09	19° $\mathring{Z}$ 49'39		retrograde	193 Apr 07 j 11:55	27° $\mathring{Z}$ 39'12	
opposition	187 Apr 07 j 23:56	16° $\mathring{Z}$ 32'06	2°48'10	opposition	193 Jun 17 j 08:58	24° $\mathring{Z}$ 20'42	0°39'37
min. Earth dist.	187 Apr 08 j 01:23	16° $\mathring{Z}$ 31'50	8.95895 AU	min. Earth dist.	193 Jun 17 j 16:07	24° $\mathring{Z}$ 19'23	9.03746 AU
direct	187 Jun 18 j 07:03	13° $\mathring{Z}$ 09'49		direct	193 Aug 26 j 19:42	21° $\mathring{Z}$ 02'40	
evening set	187 Sep 30 j 00:46	20° $\mathring{Z}$ 24'49		evening set	193 Dec 05 j 01:29	28° $\mathring{Z}$ 02'24	
conjunction	187 Oct 16 j 18:16	22° $\mathring{Z}$ 22'45	2°14'41	conjunction	193 Dec 21 j 16:14	29° $\mathring{Z}$ 59'49	0°18'57
minimum elong	187 Oct 16 j 18:17	22° $\mathring{Z}$ 22'45	2°14'41	minimum elong	193 Dec 21 j 16:15	29° $\mathring{Z}$ 59'49	0°18'57
max. Earth dist.	187 Oct 16 j 15:31	22° $\mathring{Z}$ 21'56	10.99510 AU	max. Earth dist.	193 Dec 21 j 06:57	29° $\mathring{Z}$ 57'04	11.00554 AU
morning rise	187 Nov 02 j 08:15	24° $\mathring{Z}$ 19'43			193 Dec 21 j 16:52	0° $\mathring{Z}$	
	188 Jan 01 j 00:15	0° $\mathring{M}$		morning rise	194 Jan 07 j 08:35	1° $\mathring{Z}$ 57'44	
retrograde	188 Feb 09 j 15:44	1° $\mathring{M}$ 17'37		retrograde	194 Apr 19 j 15:47	9° $\mathring{Z}$ 07'01	
	188 Mar 21 j 08:26	30° $\mathring{R}$ $\mathring{Z}$		opposition	194 Jun 29 j 14:51	5° $\mathring{Z}$ 47'26	0°06'02
opposition	188 Apr 19 j 03:29	28° $\mathring{Z}$ 00'35	2°39'34	min. Earth dist.	194 Jun 29 j 22:54	5° $\mathring{Z}$ 45'56	8.96776 AU
min. Earth dist.	188 Apr 19 j 06:06	28° $\mathring{Z}$ 00'06	9.02937 AU	desc. node	194 Sep 03 j 23:58	2° $\mathring{Z}$ 29'56	
direct	188 Jun 29 j 12:33	24° $\mathring{Z}$ 39'32		direct	194 Sep 07 j 15:49	2° $\mathring{Z}$ 29'15	
	188 Sep 24 j 09:40	0° $\mathring{M}$		evening set	194 Dec 16 j 13:25	9° $\mathring{Z}$ 31'43	
evening set	188 Oct 10 j 14:45	1° $\mathring{M}$ 48'44					
conjunction	188 Oct 27 j 06:07	3° $\mathring{M}$ 45'28	2°05'12	conjunction	195 Jan 02 j 05:32	11° $\mathring{Z}$ 30'30	0°-9'00
minimum elong	188 Oct 27 j 06:09	3° $\mathring{M}$ 45'28	2°05'12	minimum elong	195 Jan 02 j 05:31	11° $\mathring{Z}$ 30'29	0°09'00
max. Earth dist.	188 Oct 27 j 02:07	3° $\mathring{M}$ 44'17	11.05521 AU	behind sun begin	195 Jan 01 j 23:31	11° $\mathring{Z}$ 28'43	
morning rise	188 Nov 12 j 18:40	5° $\mathring{M}$ 41'26		behind sun end	195 Jan 02 j 11:31	11° $\mathring{Z}$ 32'16	
retrograde	189 Feb 20 j 06:57	12° $\mathring{M}$ 37'23		max. Earth dist.	195 Jan 01 j 20:18	11° $\mathring{Z}$ 27'45	10.92535 AU
opposition	189 May 01 j 04:58	9° $\mathring{M}$ 20'38	2°24'51	morning rise	195 Jan 19 j 00:00	13° $\mathring{Z}$ 30'00	
min. Earth dist.	189 May 01 j 09:21	9° $\mathring{M}$ 19'49	9.07844 AU	retrograde	195 May 02 j 03:31	20° $\mathring{Z}$ 46'40	
direct	189 Jul 11 j 13:07	6° $\mathring{M}$ 00'36		opposition	195 Jul 12 j 00:45	17° $\mathring{Z}$ 25'47	0°-28'-24
evening set	189 Oct 22 j 00:14	13° $\mathring{M}$ 05'12		min. Earth dist.	195 Jul 12 j 08:17	17° $\mathring{Z}$ 24'23	8.87755 AU
				direct	195 Sep 19 j 14:51	14° $\mathring{Z}$ 07'14	
				evening set	195 Dec 28 j 07:11	21° $\mathring{Z}$ 13'58	
conjunction	189 Nov 07 j 14:10	15° $\mathring{M}$ 01'11	1°50'56	conjunction	196 Jan 14 j 01:05	23° $\mathring{Z}$ 14'27	0°-36'-57
minimum elong	189 Nov 07 j 14:13	15° $\mathring{M}$ 01'12	1°50'55	minimum elong	196 Jan 14 j 01:04	23° $\mathring{Z}$ 14'27	0°36'58
max. Earth dist.	189 Nov 07 j 08:10	14° $\mathring{M}$ 59'25	11.09316 AU	max. Earth dist.	196 Jan 13 j 16:57	23° $\mathring{Z}$ 12'00	10.82640 AU
	189 Nov 07 j 10:08	15° $\mathring{M}$		morning rise	196 Jan 30 j 21:53	25° $\mathring{Z}$ 15'53	
morning rise	189 Nov 24 j 02:18	16° $\mathring{M}$ 56'40			196 Mar 16 j 01:06	0° $\mathring{Z}$	
retrograde	190 Mar 03 j 22:35	23° $\mathring{M}$ 52'09		retrograde	196 May 13 j 21:52	2° $\mathring{Z}$ 41'13	
opposition	190 May 13 j 05:03	20° $\mathring{M}$ 35'23	2°04'43		196 Jul 14 j 12:09	30° $\mathring{R}$ $\mathring{Z}$	
min. Earth dist.	190 May 13 j 10:52	20° $\mathring{M}$ 34'19	9.10447 AU	opposition	196 Jul 23 j 15:28	29° $\mathring{Z}$ 18'51	-1°-2'-26
direct	190 Jul 23 j 12:05	17° $\mathring{M}$ 16'12		min. Earth dist.	196 Jul 23 j 21:47	29° $\mathring{Z}$ 17'40	8.77092 AU
evening set	190 Nov 02 j 06:41	24° $\mathring{M}$ 17'27		direct	196 Sep 30 j 16:29	25° $\mathring{Z}$ 59'39	
					196 Dec 10 j 18:38	0° $\mathring{Z}$	
conjunction	190 Nov 18 j 20:01	26° $\mathring{M}$ 13'10	1°32'28	evening set	197 Jan 08 j 08:21	3° $\mathring{Z}$ 12'10	
minimum elong	190 Nov 18 j 20:04	26° $\mathring{M}$ 13'10	1°32'28				
max. Earth dist.	190 Nov 18 j 12:55	26° $\mathring{M}$ 11'05	11.10760 AU				
morning rise	190 Dec 05 j 08:22	28° $\mathring{M}$ 08'36		conjunction	197 Jan 25 j 04:16	5° $\mathring{Z}$ 14'38	-1°-3'-53
	190 Dec 22 j 00:47	0° $\mathring{Z}$		minimum elong	197 Jan 25 j 04:14	5° $\mathring{Z}$ 14'38	1°03'55



max. Earth dist.	197 Jan 24 j 20:58	5° $\approx$ 12'24	10.71312 AU	opposition	203 Oct 25 j 18:24	1° $\mathcal{B}$ 35'49	-2°-37'-20
morning rise	197 Feb 11 j 03:46	7° $\approx$ 18'16		min. Earth dist.	203 Oct 25 j 14:11	1° $\mathcal{B}$ 36'42	8.01896 AU
retrograde	197 May 27 j 00:43	14° $\approx$ 53'15			203 Nov 14 j 21:25	30° $\mathcal{R}\mathcal{Y}$	
opposition	197 Aug 05 j 11:49	11° $\approx$ 29'18	-1°-34'-34	direct	203 Dec 30 j 23:34	28° $\mathcal{Y}$ 08'24	
min. Earth dist.	197 Aug 05 j 17:02	11° $\approx$ 28'18	8.65252 AU		204 Feb 14 j 04:48	0° $\mathcal{B}$	
direct	197 Oct 12 j 23:42	8° $\approx$ 09'13		evening set	204 Apr 12 j 04:25	6° $\mathcal{B}$ 17'58	
	198 Jan 16 j 18:27	15° $\approx$					
evening set	198 Jan 20 j 18:18	15° $\approx$ 28'49		conjunction	204 Apr 30 j 02:00	8° $\mathcal{B}$ 37'47	-1°-58'-11
				minimum elong	204 Apr 30 j 02:03	8° $\mathcal{B}$ 37'48	1°58'11
conjunction	198 Feb 06 j 16:29	17° $\approx$ 33'32	-1°-28'-33	max. Earth dist.	204 Apr 30 j 07:45	8° $\mathcal{B}$ 39'40	9.99474 AU
minimum elong	198 Feb 06 j 16:26	17° $\approx$ 33'31	1°28'34	morning rise	204 May 18 j 02:39	10° $\mathcal{B}$ 58'34	
max. Earth dist.	198 Feb 06 j 09:37	17° $\approx$ 31'24	10.59052 AU		204 Jun 20 j 16:56	15° $\mathcal{B}$	
morning rise	198 Feb 23 j 19:00	19° $\approx$ 39'36		retrograde	204 Sep 01 j 20:15	19° $\mathcal{B}$ 24'11	
retrograde	198 Jun 09 j 11:51	27° $\approx$ 24'50		opposition	204 Nov 08 j 02:12	15° $\mathcal{B}$ 53'27	-2°-15'-30
opposition	198 Aug 18 j 14:15	23° $\approx$ 59'18	-2°-3'-13	min. Earth dist.	204 Nov 07 j 21:04	15° $\mathcal{B}$ 54'31	7.98082 AU
min. Earth dist.	198 Aug 18 j 18:45	23° $\approx$ 58'25	8.52770 AU		204 Nov 18 j 22:30	15° $\mathcal{R}\mathcal{B}$	
direct	198 Oct 25 j 12:13	20° $\approx$ 38'07		direct	205 Jan 13 j 08:47	12° $\mathcal{B}$ 25'01	
evening set	199 Feb 02 j 14:03	28° $\approx$ 05'55			205 Mar 08 j 05:41	15° $\mathcal{B}$	
	199 Feb 17 j 21:14	0° $\mathcal{H}$		evening set	205 Apr 27 j 07:33	20° $\mathcal{B}$ 39'17	
conjunction	199 Feb 19 j 15:03	0° $\mathcal{H}$ 13'06	-1°-49'-34	conjunction	205 May 15 j 08:54	23° $\mathcal{B}$ 00'31	-1°-37'-1
minimum elong	199 Feb 19 j 15:00	0° $\mathcal{H}$ 13'05	1°49'35	minimum elong	205 May 15 j 08:58	23° $\mathcal{B}$ 00'32	1°37'02
max. Earth dist.	199 Feb 19 j 09:41	0° $\mathcal{H}$ 11'25	10.46431 AU	max. Earth dist.	205 May 15 j 15:57	23° $\mathcal{B}$ 02'50	9.97216 AU
morning rise	199 Mar 08 j 20:51	2° $\mathcal{H}$ 21'47		morning rise	205 Jun 02 j 12:15	25° $\mathcal{B}$ 22'22	
retrograde	199 Jun 23 j 05:39	10° $\mathcal{H}$ 17'23			205 Jul 11 j 19:18	0° $\mathcal{II}$	
opposition	199 Aug 31 j 23:06	6° $\mathcal{H}$ 50'19	-2°-26'-38	retrograde	205 Sep 16 j 12:33	3° $\mathcal{II}$ 45'48	
min. Earth dist.	199 Sep 01 j 02:21	6° $\mathcal{H}$ 49'40	8.40240 AU	opposition	205 Nov 22 j 10:38	0° $\mathcal{II}$ 15'33	-1°-45'-3
direct	199 Nov 07 j 08:59	3° $\mathcal{H}$ 27'55		min. Earth dist.	205 Nov 22 j 04:41	0° $\mathcal{II}$ 16'48	7.97343 AU
evening set	200 Feb 15 j 20:19	11° $\mathcal{H}$ 04'39			205 Nov 25 j 13:25	30° $\mathcal{R}\mathcal{B}$	
				direct	206 Jan 27 j 21:56	26° $\mathcal{B}$ 46'23	
conjunction	200 Mar 04 j 00:45	13° $\mathcal{H}$ 14'29	-2°-5'-34		206 Mar 29 j 21:12	0° $\mathcal{II}$	
minimum elong	200 Mar 04 j 00:43	13° $\mathcal{H}$ 14'28	2°05'35	evening set	206 May 12 j 13:23	5° $\mathcal{II}$ 03'02	
max. Earth dist.	200 Mar 03 j 21:51	13° $\mathcal{H}$ 13'33	10.34055 AU				
morning rise	200 Mar 21 j 10:04	15° $\mathcal{H}$ 25'52		conjunction	206 May 30 j 17:24	7° $\mathcal{II}$ 24'52	-1°-9'-47
retrograde	200 Jul 06 j 07:09	23° $\mathcal{H}$ 31'21		minimum elong	206 May 30 j 17:27	7° $\mathcal{II}$ 24'53	1°09'48
opposition	200 Sep 13 j 14:08	20° $\mathcal{H}$ 02'53	-2°-43'-6	max. Earth dist.	206 May 31 j 01:46	7° $\mathcal{II}$ 27'36	9.98105 AU
min. Earth dist.	200 Sep 13 j 15:32	20° $\mathcal{H}$ 02'36	8.28268 AU	morning rise	206 Jun 17 j 22:07	9° $\mathcal{II}$ 46'51	
direct	200 Nov 19 j 14:21	16° $\mathcal{H}$ 39'12		retrograde	206 Oct 01 j 01:19	18° $\mathcal{II}$ 05'20	
evening set	201 Feb 28 j 13:39	24° $\mathcal{H}$ 25'08		opposition	206 Dec 06 j 17:45	14° $\mathcal{II}$ 35'57	-1°-8'-5
				min. Earth dist.	206 Dec 06 j 10:49	14° $\mathcal{II}$ 37'23	7.99750 AU
conjunction	201 Mar 17 j 22:01	26° $\mathcal{H}$ 37'43	-2°-15'-16	direct	207 Feb 11 j 12:56	11° $\mathcal{II}$ 06'20	
minimum elong	201 Mar 17 j 22:00	26° $\mathcal{H}$ 37'42	2°15'16	evening set	207 May 27 j 19:15	19° $\mathcal{II}$ 23'01	
max. Earth dist.	201 Mar 17 j 21:54	26° $\mathcal{H}$ 37'40	10.22552 AU				
morning rise	201 Apr 04 j 11:03	28° $\mathcal{H}$ 51'49		conjunction	207 Jun 15 j 00:25	21° $\mathcal{II}$ 44'29	0°-38'-21
	201 Apr 13 j 15:13	0° $\mathcal{Y}$		minimum elong	207 Jun 15 j 00:27	21° $\mathcal{II}$ 44'30	0°38'22
retrograde	201 Jul 20 j 16:38	7° $\mathcal{Y}$ 05'55		max. Earth dist.	207 Jun 15 j 09:50	21° $\mathcal{II}$ 47'33	10.02092 AU
opposition	201 Sep 27 j 10:50	3° $\mathcal{Y}$ 36'18	-2°-51'-2	morning rise	207 Jul 03 j 04:49	24° $\mathcal{II}$ 05'40	
min. Earth dist.	201 Sep 27 j 09:57	3° $\mathcal{Y}$ 36'29	8.17483 AU		207 Aug 25 j 16:15	0° $\mathcal{B}$	
direct	201 Dec 03 j 01:50	0° $\mathcal{Y}$ 11'19		retrograde	207 Oct 15 j 08:44	2° $\mathcal{B}$ 16'49	
evening set	202 Mar 14 j 17:31	8° $\mathcal{Y}$ 06'12			207 Dec 06 j 05:17	30° $\mathcal{R}\mathcal{II}$	
				opposition	207 Dec 20 j 21:49	28° $\mathcal{II}$ 48'39	0°-27'-17
conjunction	202 Apr 01 j 06:11	10° $\mathcal{Y}$ 21'28	-2°-17'-36	min. Earth dist.	207 Dec 20 j 14:06	28° $\mathcal{II}$ 50'14	8.05153 AU
minimum elong	202 Apr 01 j 06:12	10° $\mathcal{Y}$ 21'28	2°17'36	direct	208 Feb 26 j 03:50	25° $\mathcal{II}$ 18'56	
max. Earth dist.	202 Apr 01 j 08:25	10° $\mathcal{Y}$ 22'11	10.12570 AU		208 May 12 j 02:45	0° $\mathcal{B}$	
morning rise	202 Apr 18 j 23:11	12° $\mathcal{Y}$ 38'10		evening set	208 Jun 10 j 22:03	3° $\mathcal{B}$ 33'23	
retrograde	202 Aug 04 j 08:00	20° $\mathcal{Y}$ 58'53					
opposition	202 Oct 11 j 12:42	17° $\mathcal{Y}$ 28'29	-2°-49'-17	conjunction	208 Jun 29 j 02:34	5° $\mathcal{B}$ 53'32	0°-5'00
min. Earth dist.	202 Oct 11 j 09:50	17° $\mathcal{Y}$ 29'04	8.08508 AU	minimum elong	208 Jun 29 j 02:33	5° $\mathcal{B}$ 53'32	0°05'00
direct	202 Dec 16 j 20:22	14° $\mathcal{Y}$ 02'14		behind sun begin	208 Jun 28 j 19:24	5° $\mathcal{B}$ 51'15	
evening set	203 Mar 29 j 06:54	22° $\mathcal{Y}$ 05'10		behind sun end	208 Jun 29 j 09:41	5° $\mathcal{B}$ 55'49	
				max. Earth dist.	208 Jun 29 j 12:30	5° $\mathcal{B}$ 56'44	10.08909 AU
conjunction	203 Apr 16 j 00:05	24° $\mathcal{Y}$ 22'55	-2°-11'-55	morning rise	208 Jul 17 j 04:50	8° $\mathcal{B}$ 12'57	
minimum elong	203 Apr 16 j 00:08	24° $\mathcal{Y}$ 22'55	2°11'55	asc. node	208 Aug 23 j 23:02	12° $\mathcal{B}$ 36'10	
max. Earth dist.	203 Apr 16 j 04:17	24° $\mathcal{Y}$ 24'16	10.04711 AU	retrograde	208 Oct 28 j 08:59	16° $\mathcal{B}$ 15'11	
morning rise	203 May 03 j 21:07	26° $\mathcal{Y}$ 41'56		opposition	209 Jan 02 j 21:45	12° $\mathcal{B}$ 48'28	0°14'29
	203 May 31 j 02:02	0° $\mathcal{B}$		min. Earth dist.	209 Jan 02 j 13:45	12° $\mathcal{B}$ 50'07	8.13204 AU
retrograde	203 Aug 19 j 02:23	5° $\mathcal{B}$ 06'38		direct	209 Mar 11 j 16:35	9° $\mathcal{B}$ 18'59	



evening set	209 Jun 25 j 18:44	17° <del>5</del> 29'08		conjunction	215 Sep 30 j 07:07	6° <del>5</del> 02'21	2°18'46
				minimum elong	215 Sep 30 j 07:07	6° <del>5</del> 02'21	2°18'46
conjunction	209 Jul 13 j 20:47	19° <del>5</del> 47'06	0°28'15	max. Earth dist.	215 Sep 30 j 05:44	6° <del>5</del> 01'56	10.87754 AU
minimum elong	209 Jul 13 j 20:45	19° <del>5</del> 47'06	0°28'15	morning rise	215 Oct 17 j 00:46	8° <del>5</del> 01'42	
max. Earth dist.	209 Jul 14 j 06:45	19° <del>5</del> 50'17	10.18112 AU	retrograde	216 Jan 24 j 06:51	15° <del>5</del> 05'14	
morning rise	209 Jul 31 j 19:25	22° <del>5</del> 04'00		opposition	216 Apr 02 j 03:13	11° <del>5</del> 47'44	2°49'41
retrograde	209 Nov 11 j 01:03	29° <del>5</del> 56'28		min. Earth dist.	216 Apr 02 j 05:30	11° <del>5</del> 47'18	8.92346 AU
opposition	210 Jan 16 j 16:24	26° <del>5</del> 31'19	0°54'30	direct	216 Jun 12 j 06:22	8° <del>5</del> 25'11	
min. Earth dist.	210 Jan 16 j 08:54	26° <del>5</del> 32'51	8.23392 AU	evening set	216 Sep 24 j 09:21	15° <del>5</del> 43'23	
direct	210 Mar 26 j 00:40	23° <del>5</del> 02'21					
	210 Jul 01 j 05:35	0° <del>5</del>		conjunction	216 Oct 11 j 03:58	17° <del>5</del> 42'05	2°17'01
evening set	210 Jul 10 j 07:18	1° <del>5</del> 06'32		minimum elong	216 Oct 11 j 03:59	17° <del>5</del> 42'05	2°17'02
				max. Earth dist.	216 Oct 11 j 00:02	17° <del>5</del> 40'55	10.96156 AU
conjunction	210 Jul 28 j 05:27	3° <del>5</del> 021'43	0°59'09	morning rise	216 Oct 27 j 18:58	19° <del>5</del> 39'44	
minimum elong	210 Jul 28 j 05:24	3° <del>5</del> 021'42	0°59'09	retrograde	217 Feb 04 j 01:07	26° <del>5</del> 39'20	
max. Earth dist.	210 Jul 28 j 14:28	3° <del>5</del> 024'34	10.29127 AU	opposition	217 Apr 14 j 08:30	23° <del>5</del> 22'19	2°43'54
morning rise	210 Aug 14 j 23:23	5° <del>5</del> 035'35		min. Earth dist.	217 Apr 14 j 12:32	23° <del>5</del> 21'34	8.99816 AU
retrograde	210 Nov 24 j 08:56	13° <del>5</del> 017'57		direct	217 Jun 24 j 15:31	20° <del>5</del> 00'51	
opposition	211 Jan 30 j 04:57	9° <del>5</del> 054'25	1°30'28	evening set	217 Oct 06 j 02:25	27° <del>5</del> 12'57	
min. Earth dist.	211 Jan 29 j 22:55	9° <del>5</del> 055'38	8.35092 AU				
direct	211 Apr 09 j 02:54	6° <del>5</del> 026'11		conjunction	217 Oct 22 j 18:36	29° <del>5</del> 10'15	2°09'45
evening set	211 Jul 24 j 10:02	14° <del>5</del> 023'12		minimum elong	217 Oct 22 j 18:37	29° <del>5</del> 10'16	2°09'46
	211 Jul 29 j 09:38	15° <del>5</del>		max. Earth dist.	217 Oct 22 j 12:54	29° <del>5</del> 08'34	11.02624 AU
					217 Oct 29 j 19:15	0° <del>5</del>	
conjunction	211 Aug 11 j 03:18	16° <del>5</del> 035'14	1°26'12	morning rise	217 Nov 08 j 07:53	1° <del>5</del> 06'44	
minimum elong	211 Aug 11 j 03:15	16° <del>5</del> 035'13	1°26'11	retrograde	218 Feb 15 j 16:52	8° <del>5</del> 03'50	
max. Earth dist.	211 Aug 11 j 10:07	16° <del>5</del> 037'22	10.41290 AU	opposition	218 Apr 26 j 11:04	4° <del>5</del> 047'00	2°31'44
morning rise	211 Aug 28 j 15:56	18° <del>5</del> 045'49		min. Earth dist.	218 Apr 26 j 15:45	4° <del>5</del> 046'08	9.05211 AU
retrograde	211 Dec 07 j 07:45	26° <del>5</del> 018'21		direct	218 Jul 06 j 20:23	1° <del>5</del> 026'27	
opposition	212 Feb 12 j 11:18	22° <del>5</del> 056'23	2°00'41	evening set	218 Oct 17 j 14:04	8° <del>5</del> 033'30	
min. Earth dist.	212 Feb 12 j 06:45	22° <del>5</del> 057'17	8.47607 AU				
direct	212 Apr 21 j 23:13	19° <del>5</del> 029'06		conjunction	218 Nov 03 j 04:43	10° <del>5</del> 029'53	1°57'28
evening set	212 Aug 06 j 01:47	27° <del>5</del> 018'07		minimum elong	218 Nov 03 j 04:45	10° <del>5</del> 029'54	1°57'28
				max. Earth dist.	218 Nov 02 j 22:37	10° <del>5</del> 028'05	11.06935 AU
conjunction	212 Aug 23 j 13:43	29° <del>5</del> 026'54	1°48'12	morning rise	218 Nov 19 j 16:59	12° <del>5</del> 025'40	
minimum elong	212 Aug 23 j 13:40	29° <del>5</del> 026'53	1°48'11		218 Dec 13 j 03:54	15° <del>5</del>	
max. Earth dist.	212 Aug 23 j 18:08	29° <del>5</del> 028'16	10.53897 AU	retrograde	219 Feb 27 j 10:39	19° <del>5</del> 021'43	
	212 Aug 28 j 00:57	0° <del>5</del>		opposition	219 May 08 j 11:58	16° <del>5</del> 004'47	2°13'51
morning rise	212 Sep 09 j 20:56	1° <del>5</del> 034'12		min. Earth dist.	219 May 08 j 17:22	16° <del>5</del> 003'48	9.08358 AU
retrograde	212 Dec 18 j 21:16	8° <del>5</del> 057'41			219 May 23 j 10:16	15° <del>5</del> 008	
opposition	213 Feb 24 j 11:20	5° <del>5</del> 037'06	2°24'03	direct	219 Jul 18 j 21:06	12° <del>5</del> 045'01	
min. Earth dist.	213 Feb 24 j 08:03	5° <del>5</del> 037'45	8.60216 AU		219 Sep 10 j 23:32	15° <del>5</del>	
direct	213 May 05 j 13:29	2° <del>5</del> 010'55		evening set	219 Oct 28 j 21:56	19° <del>5</del> 048'08	
evening set	213 Aug 19 j 06:26	9° <del>5</del> 051'40					
				conjunction	219 Nov 14 j 11:40	21° <del>5</del> 044'06	1°40'44
conjunction	213 Sep 05 j 13:14	11° <del>5</del> 057'21	2°04'28	minimum elong	219 Nov 14 j 11:42	21° <del>5</del> 044'07	1°40'43
minimum elong	213 Sep 05 j 13:11	11° <del>5</del> 057'20	2°04'27	max. Earth dist.	219 Nov 14 j 04:49	21° <del>5</del> 042'05	11.08956 AU
max. Earth dist.	213 Sep 05 j 15:30	11° <del>5</del> 058'02	10.66243 AU	morning rise	219 Nov 30 j 23:46	23° <del>5</del> 039'40	
morning rise	213 Sep 22 j 15:16	14° <del>5</del> 001'34			220 Feb 11 j 22:00	0° <del>5</del>	
retrograde	213 Dec 31 j 06:02	21° <del>5</del> 017'05		retrograde	220 Mar 10 j 02:22	0° <del>5</del> 036'10	
opposition	214 Mar 09 j 05:22	17° <del>5</del> 057'43	2°40'03		220 Apr 06 j 17:06	30° <del>5</del> 008	
min. Earth dist.	214 Mar 09 j 03:22	17° <del>5</del> 058'06	8.72221 AU	opposition	220 May 19 j 12:25	27° <del>5</del> 018'54	1°50'56
direct	214 May 18 j 18:14	14° <del>5</del> 032'45		min. Earth dist.	220 May 19 j 19:02	27° <del>5</del> 017'41	9.09178 AU
evening set	214 Sep 01 j 00:30	22° <del>5</del> 005'24		direct	220 Jul 29 j 16:29	23° <del>5</del> 059'41	
					220 Oct 30 j 06:50	0° <del>5</del>	
conjunction	214 Sep 18 j 02:40	24° <del>5</del> 008'20	2°14'39	evening set	220 Nov 08 j 03:38	1° <del>5</del> 000'14	
minimum elong	214 Sep 18 j 02:39	24° <del>5</del> 008'20	2°14'39				
max. Earth dist.	214 Sep 18 j 03:22	24° <del>5</del> 008'33	10.77682 AU	conjunction	220 Nov 24 j 17:00	2° <del>5</del> 056'11	1°20'09
morning rise	214 Oct 05 j 00:04	26° <del>5</del> 009'53		minimum elong	220 Nov 24 j 17:03	2° <del>5</del> 056'12	1°20'08
	214 Nov 09 j 07:52	0° <del>5</del>		max. Earth dist.	220 Nov 24 j 08:35	2° <del>5</del> 053'43	11.08641 AU
retrograde	215 Jan 12 j 09:03	3° <del>5</del> 018'43		morning rise	220 Dec 11 j 05:51	4° <del>5</del> 052'01	
opposition	215 Mar 21 j 18:24	0° <del>5</del> 000'24	2°48'32	retrograde	221 Mar 21 j 20:29	11° <del>5</del> 050'34	
	215 Mar 21 j 20:31	30° <del>5</del> 008		opposition	221 May 31 j 13:13	8° <del>5</del> 032'40	1°23'47
min. Earth dist.	215 Mar 21 j 18:26	0° <del>5</del> 000'24	8.83054 AU	min. Earth dist.	221 May 31 j 20:51	8° <del>5</del> 031'16	9.07657 AU
direct	215 May 31 j 14:49	26° <del>5</del> 036'41		direct	221 Aug 10 j 12:32	5° <del>5</del> 013'48	
	215 Aug 06 j 17:34	0° <del>5</del>		evening set	221 Nov 19 j 09:07	12° <del>5</del> 013'15	
evening set	215 Sep 13 j 09:05	4° <del>5</del> 001'46					



conjunction	221 Dec 05 j 22:47	14°♄09'38	0°56'27	conjunction	228 Feb 14 j 13:06	25°♄08'04	-1°-41'-16
minimum elong	221 Dec 05 j 22:49	14°♄09'38	0°56'27	minimum elong	228 Feb 14 j 13:03	25°♄08'03	1°41'17
max. Earth dist.	221 Dec 05 j 13:57	14°♄07'01	11.05998 AU	max. Earth dist.	228 Feb 14 j 09:27	25°♄06'56	10.51484 AU
morning rise	221 Dec 22 j 12:48	16°♄06'08		morning rise	228 Mar 02 j 17:20	27°♄15'39	
retrograde	222 Apr 02 j 18:20	23°♄08'15			228 Mar 26 j 04:54	0°♄	
opposition	222 Jun 12 j 15:11	19°♄49'33	0°53'16	retrograde	228 Jun 16 j 19:58	5°♄07'05	
min. Earth dist.	222 Jun 12 j 22:41	19°♄48'10	9.03837 AU	opposition	228 Aug 25 j 17:21	1°♄40'40	-2°-17'-32
direct	222 Aug 22 j 07:14	16°♄30'52		min. Earth dist.	228 Aug 25 j 19:15	1°♄40'17	8.45483 AU
evening set	222 Nov 30 j 16:02	23°♄30'43			228 Sep 17 j 04:24	30°♄	
				direct	228 Nov 01 j 08:10	28°♄18'56	
conjunction	222 Dec 17 j 06:35	25°♄27'55	0°30'24		228 Dec 15 j 03:23	0°♄	
minimum elong	222 Dec 17 j 06:36	25°♄27'55	0°30'24	evening set	229 Feb 09 j 15:23	5°♄51'57	
max. Earth dist.	222 Dec 16 j 22:24	25°♄25'30	11.01104 AU				
morning rise	223 Jan 02 j 22:05	27°♄25'28		conjunction	229 Feb 26 j 18:18	8°♄00'39	-1°-59'-30
	223 Jan 26 j 05:17	0°♄		minimum elong	229 Feb 26 j 18:15	8°♄00'38	1°59'31
retrograde	223 Apr 14 j 21:08	4°♄32'47		max. Earth dist.	229 Feb 26 j 16:01	7°♄59'55	10.39440 AU
opposition	223 Jun 24 j 19:55	1°♄13'02	0°20'20	morning rise	229 Mar 16 j 01:57	10°♄10'52	
min. Earth dist.	223 Jun 25 j 02:38	1°♄11'48	8.97844 AU	retrograde	229 Jun 30 j 19:46	18°♄12'19	
	223 Jul 11 j 15:30	30°♄		opposition	229 Sep 08 j 06:06	14°♄44'39	-2°-37'-2
direct	223 Sep 03 j 02:41	27°♄54'21		min. Earth dist.	229 Sep 08 j 06:37	14°♄44'33	8.33705 AU
	223 Oct 24 j 05:38	0°♄		direct	229 Nov 14 j 09:03	11°♄21'51	
evening set	223 Dec 12 j 02:12	4°♄56'08		evening set	230 Feb 23 j 04:19	19°♄03'52	
conjunction	223 Dec 28 j 17:53	6°♄54'31	0°02'53	conjunction	230 Mar 12 j 10:44	21°♄15'12	-2°-11'-57
minimum elong	223 Dec 28 j 17:53	6°♄54'31	0°02'54	minimum elong	230 Mar 12 j 10:42	21°♄15'12	2°11'58
behind sun begin	223 Dec 28 j 10:55	6°♄52'28		max. Earth dist.	230 Mar 12 j 09:58	21°♄14'57	10.27998 AU
behind sun end	223 Dec 29 j 00:51	6°♄56'34		morning rise	230 Mar 29 j 22:08	23°♄28'06	
max. Earth dist.	223 Dec 28 j 09:55	6°♄52'10	10.94120 AU		230 May 31 j 21:52	0°♄	
morning rise	224 Jan 14 j 11:22	8°♄53'30		retrograde	230 Jul 15 j 02:46	1°♄38'37	
desc. node	224 Feb 04 j 16:39	11°♄16'06			230 Aug 28 j 21:37	30°♄	
retrograde	224 Apr 26 j 06:52	16°♄07'29		opposition	230 Sep 22 j 00:56	28°♄09'54	-2°-48'-38
opposition	224 Jul 06 j 04:16	12°♄46'34	0°-13'-55	min. Earth dist.	230 Sep 22 j 00:16	28°♄10'02	8.22839 AU
min. Earth dist.	224 Jul 06 j 10:46	12°♄45'21	8.89885 AU	direct	230 Nov 27 j 17:46	24°♄45'56	
direct	224 Sep 13 j 23:19	9°♄27'39			231 Feb 15 j 14:27	0°♄	
evening set	224 Dec 22 j 17:34	16°♄32'57		evening set	231 Mar 09 j 04:01	2°♄36'52	
conjunction	225 Jan 08 j 10:39	18°♄32'50	0°-25'-16	conjunction	231 Mar 26 j 14:34	4°♄50'51	-2°-17'-25
minimum elong	225 Jan 08 j 10:38	18°♄32'50	0°25'17	minimum elong	231 Mar 26 j 14:34	4°♄50'51	2°17'26
max. Earth dist.	225 Jan 08 j 02:19	18°♄30'20	10.85295 AU	max. Earth dist.	231 Mar 26 j 15:52	4°♄51'16	10.17786 AU
morning rise	225 Jan 25 j 06:33	20°♄33'37		morning rise	231 Apr 13 j 05:56	7°♄06'22	
retrograde	225 May 08 j 21:17	27°♄55'33		retrograde	231 Jul 29 j 15:08	15°♄24'10	
opposition	225 Jul 18 j 16:56	24°♄33'21	0°-48'-19	opposition	231 Oct 06 j 00:57	11°♄54'38	-2°-50'-58
min. Earth dist.	225 Jul 18 j 23:26	24°♄32'07	8.80253 AU	min. Earth dist.	231 Oct 05 j 23:01	11°♄55'01	8.13480 AU
direct	225 Sep 25 j 22:33	21°♄13'59		direct	231 Dec 11 j 10:55	8°♄29'28	
evening set	226 Jan 03 j 15:32	28°♄24'22		evening set	232 Mar 22 j 13:38	16°♄28'39	
	226 Jan 16 j 20:46	0°♄					
conjunction	226 Jan 20 j 10:28	0°♄26'05	0°-52'-48	conjunction	232 Apr 09 j 04:45	18°♄45'10	-2°-15'-6
minimum elong	226 Jan 20 j 10:27	0°♄26'04	0°52'49	minimum elong	232 Apr 09 j 04:47	18°♄45'11	2°15'06
max. Earth dist.	226 Jan 20 j 02:53	0°♄23'46	10.74955 AU	max. Earth dist.	232 Apr 09 j 08:22	18°♄46'21	10.09354 AU
morning rise	226 Feb 06 j 08:58	2°♄28'53		morning rise	232 Apr 27 j 00:07	21°♄03'04	
retrograde	226 May 21 j 19:39	10°♄00'00		retrograde	232 Aug 12 j 07:05	29°♄25'46	
opposition	226 Jul 31 j 11:02	6°♄36'24	-1°-21'-27	opposition	232 Oct 19 j 05:05	25°♄55'43	-2°-43'-15
min. Earth dist.	226 Jul 31 j 16:41	6°♄35'19	8.69321 AU	min. Earth dist.	232 Oct 19 j 01:39	25°♄56'25	8.06106 AU
direct	226 Oct 08 j 05:02	3°♄16'24		direct	232 Dec 24 j 11:55	22°♄29'23	
evening set	227 Jan 15 j 21:33	10°♄33'13			233 Apr 01 j 15:34	0°♄	
				evening set	233 Apr 06 j 07:46	0°♄35'40	
conjunction	227 Feb 01 j 18:47	12°♄37'03	-1°-18'-34	conjunction	233 Apr 24 j 03:28	2°♄54'26	-2°-4'-41
minimum elong	227 Feb 01 j 18:44	12°♄37'02	1°18'36	minimum elong	233 Apr 24 j 03:31	2°♄54'27	2°04'41
max. Earth dist.	227 Feb 01 j 13:18	12°♄35'22	10.63515 AU	max. Earth dist.	233 Apr 24 j 08:59	2°♄56'14	10.03125 AU
morning rise	227 Feb 18 j 19:58	14°♄42'08		morning rise	233 May 12 j 02:30	5°♄14'17	
	227 Feb 21 j 07:29	15°♄		retrograde	233 Aug 27 j 00:37	13°♄39'12	
retrograde	227 Jun 04 j 03:40	22°♄23'16		opposition	233 Nov 02 j 11:56	10°♄09'01	-2°-25'-27
opposition	227 Aug 13 j 11:06	18°♄58'14	-1°-51'-45	min. Earth dist.	233 Nov 02 j 07:07	10°♄10'01	8.01095 AU
min. Earth dist.	227 Aug 13 j 14:50	18°♄57'30	8.57552 AU	direct	234 Jan 07 j 18:02	6°♄41'38	
direct	227 Oct 20 j 15:39	15°♄37'26		evening set	234 Apr 21 j 08:29	14°♄53'27	
evening set	228 Jan 28 j 13:13	23°♄01'54			234 Apr 22 j 04:52	15°♄	



conjunction	234 May 09 j 08:21	17°♄13'59	-1°-46'-30	minimum elong	240 Aug 04 j 17:39	11°♄19'58	1°15'27
minimum elong	234 May 09 j 08:25	17°♄14'00	1°46'31	max. Earth dist.	240 Aug 05 j 00:24	11°♄22'05	10.35565 AU
max. Earth dist.	234 May 09 j 15:29	17°♄16'19	9.99475 AU	morning rise	240 Aug 22 j 08:44	13°♄32'00	
morning rise	234 May 27 j 10:27	19°♄35'14			240 Sep 03 j 12:38	15°♄	
retrograde	234 Sep 10 j 18:47	27°♄59'27		retrograde	240 Dec 01 j 06:43	21°♄08'39	
opposition	234 Nov 16 j 20:04	24°♄29'32	-1°-58'-26	opposition	241 Feb 06 j 07:31	17°♄45'40	1°48'50
min. Earth dist.	234 Nov 16 j 14:03	24°♄30'47	7.98830 AU	min. Earth dist.	241 Feb 06 j 02:00	17°♄46'46	8.41609 AU
direct	235 Jan 22 j 04:10	21°♄01'16			241 Mar 18 j 15:59	15°♄♄	
evening set	235 May 06 j 13:25	29°♄16'38		direct	241 Apr 16 j 14:41	14°♄17'36	
	235 May 12 j 03:50	0°♄			241 May 15 j 11:42	15°♄	
				evening set	241 Jul 31 j 18:07	22°♄10'01	
conjunction	235 May 24 j 16:31	1°♄38'10	-1°-21'-38				
minimum elong	235 May 24 j 16:35	1°♄38'11	1°21'38	conjunction	241 Aug 18 j 08:36	24°♄20'15	1°39'39
max. Earth dist.	235 May 25 j 00:52	1°♄40'54	9.98747 AU	minimum elong	241 Aug 18 j 08:32	24°♄20'14	1°39'39
morning rise	235 Jun 11 j 20:37	4°♄00'02		max. Earth dist.	241 Aug 18 j 14:26	24°♄22'04	10.47764 AU
retrograde	235 Sep 25 j 10:36	12°♄20'35		morning rise	241 Sep 04 j 18:06	26°♄28'59	
opposition	235 Dec 01 j 03:51	8°♄51'18	-1°-23'-57		241 Oct 05 j 17:33	0°♄	
min. Earth dist.	235 Nov 30 j 21:15	8°♄52'40	7.99579 AU	retrograde	241 Dec 14 j 00:25	3°♄56'17	
direct	236 Feb 05 j 17:57	5°♄22'21		opposition	242 Feb 19 j 09:54	0°♄34'41	2°15'11
evening set	236 May 20 j 19:45	13°♄38'55		min. Earth dist.	242 Feb 19 j 05:53	0°♄35'28	8.54011 AU
					242 Feb 26 j 19:11	30°♄♄	
conjunction	236 Jun 08 j 00:34	16°♄00'32	0°-51'-44	direct	242 Apr 30 j 06:27	27°♄07'34	
minimum elong	236 Jun 08 j 00:37	16°♄00'33	0°51'44		242 Jun 29 j 17:24	0°♄	
max. Earth dist.	236 Jun 08 j 09:20	16°♄03'24	10.01077 AU	evening set	242 Aug 14 j 03:15	4°♄51'50	
morning rise	236 Jun 26 j 05:06	18°♄22'03					
retrograde	236 Oct 08 j 20:58	26°♄36'19		conjunction	242 Aug 31 j 12:25	6°♄58'54	1°58'23
opposition	236 Dec 14 j 09:23	23°♄07'58	0°-44'-28	minimum elong	242 Aug 31 j 12:23	6°♄58'53	1°58'22
min. Earth dist.	236 Dec 14 j 02:48	23°♄09'20	8.03366 AU	max. Earth dist.	242 Aug 31 j 16:21	7°♄00'06	10.60129 AU
direct	237 Feb 19 j 09:15	19°♄38'36		morning rise	242 Sep 17 j 16:35	9°♄04'27	
evening set	237 Jun 05 j 00:06	27°♄54'01		retrograde	242 Dec 26 j 11:10	16°♄23'15	
	237 Jun 21 j 07:30	0°♄		opposition	243 Mar 04 j 06:06	13°♄02'55	2°34'18
				min. Earth dist.	243 Mar 04 j 04:03	13°♄03'19	8.66283 AU
conjunction	237 Jun 23 j 04:56	0°♄14'44	0°-18'-55	direct	243 May 13 j 14:03	9°♄36'54	
minimum elong	237 Jun 23 j 04:57	0°♄14'44	0°18'56	evening set	243 Aug 27 j 01:35	17°♄12'58	
max. Earth dist.	237 Jun 23 j 13:32	0°♄17'31	10.06353 AU				
morning rise	237 Jul 11 j 08:14	2°♄34'56		conjunction	243 Sep 13 j 05:39	19°♄17'05	2°11'09
retrograde	237 Oct 22 j 23:40	10°♄40'57		minimum elong	243 Sep 13 j 05:37	19°♄17'04	2°11'08
opposition	237 Dec 28 j 11:13	7°♄13'48	0°-2'-48	max. Earth dist.	243 Sep 13 j 07:03	19°♄17'30	10.72076 AU
min. Earth dist.	237 Dec 28 j 04:46	7°♄15'08	8.09967 AU	morning rise	243 Sep 30 j 05:03	21°♄19'46	
asc. node	238 Jan 23 j 00:33	5°♄15'26		retrograde	244 Jan 07 j 14:28	28°♄31'11	
direct	238 Mar 06 j 00:14	3°♄44'18		opposition	244 Mar 15 j 20:54	25°♄11'58	2°45'56
evening set	238 Jun 19 j 23:26	11°♄56'19		min. Earth dist.	244 Mar 15 j 20:13	25°♄12'06	8.77862 AU
				direct	244 May 25 j 14:51	21°♄47'13	
conjunction	238 Jul 08 j 02:34	14°♄15'15	0°14'37	evening set	244 Sep 07 j 13:33	29°♄15'17	
minimum elong	238 Jul 08 j 02:33	14°♄15'14	0°14'38		244 Sep 13 j 20:44	0°♄	
behind sun begin	238 Jul 07 j 23:43	14°♄14'20					
behind sun end	238 Jul 08 j 05:23	14°♄16'08		conjunction	244 Sep 24 j 13:11	1°♄16'48	2°17'49
max. Earth dist.	238 Jul 08 j 10:39	14°♄17'50	10.14226 AU	minimum elong	244 Sep 24 j 13:10	1°♄16'48	2°17'48
morning rise	238 Jul 26 j 03:03	16°♄33'16		max. Earth dist.	244 Sep 24 j 12:41	1°♄16'39	10.83088 AU
retrograde	238 Nov 05 j 17:24	24°♄29'50		morning rise	244 Oct 11 j 08:32	3°♄17'03	
opposition	239 Jan 11 j 08:00	21°♄04'02	0°38'12	retrograde	245 Jan 18 j 12:58	10°♄22'23	
min. Earth dist.	239 Jan 11 j 01:43	21°♄05'18	8.18939 AU	opposition	245 Mar 28 j 06:48	7°♄04'06	2°50'08
direct	239 Mar 20 j 11:10	17°♄34'42		min. Earth dist.	245 Mar 28 j 06:55	7°♄04'05	8.88253 AU
evening set	239 Jul 04 j 15:30	25°♄41'29		direct	245 Jun 07 j 09:24	3°♄40'39	
				evening set	245 Sep 19 j 16:31	11°♄01'17	
conjunction	239 Jul 22 j 15:23	27°♄57'54	0°46'39				
minimum elong	239 Jul 22 j 15:21	27°♄57'53	0°46'39	conjunction	245 Oct 06 j 12:37	13°♄00'40	2°18'30
max. Earth dist.	239 Jul 22 j 22:40	28°♄00'12	10.24169 AU	minimum elong	245 Oct 06 j 12:37	13°♄00'40	2°18'30
	239 Aug 07 j 17:36	0°♄		max. Earth dist.	245 Oct 06 j 11:12	13°♄00'15	10.92711 AU
morning rise	239 Aug 09 j 11:37	0°♄13'06		morning rise	245 Oct 23 j 04:42	14°♄58'55	
retrograde	239 Nov 19 j 04:06	7°♄59'40		retrograde	246 Jan 30 j 09:34	21°♄59'31	
opposition	240 Jan 24 j 22:48	4°♄35'17	1°16'04	opposition	246 Apr 09 j 12:35	18°♄42'00	2°47'13
min. Earth dist.	240 Jan 24 j 16:38	4°♄36'31	8.29700 AU	min. Earth dist.	246 Apr 09 j 13:53	18°♄41'45	8.97040 AU
direct	240 Apr 02 j 16:17	1°♄06'27		direct	246 Jun 19 j 19:30	15°♄19'49	
evening set	240 Jul 17 j 22:12	9°♄06'33		evening set	246 Oct 01 j 11:55	22°♄33'49	
conjunction	240 Aug 04 j 17:42	11°♄19'59	1°15'27	conjunction	246 Oct 18 j 05:12	24°♄31'34	2°13'32



minimum elong	246 Oct 18 j 05:13	24°♄31'34	2°13'33	behind sun begin	252 Dec 22 j 22:33	2°♄03'46	
max. Earth dist.	246 Oct 18 j 02:34	24°♄30'47	11.00568 AU	behind sun end	252 Dec 23 j 03:53	2°♄05'20	
morning rise	246 Nov 03 j 18:59	26°♄28'22		max. Earth dist.	252 Dec 22 j 16:05	2°♄01'51	11.00309 AU
	246 Dec 06 j 18:16	0°♄		morning rise	253 Jan 08 j 17:46	4°♄02'32	
retrograde	247 Feb 11 j 01:49	3°♄25'39		retrograde	253 Apr 21 j 02:55	11°♄12'13	
opposition	247 Apr 21 j 15:34	0°♄08'38	2°37'42	opposition	253 Jul 01 j 01:43	7°♄52'34	0°01'18
min. Earth dist.	247 Apr 21 j 18:50	0°♄08'02	9.03897 AU	min. Earth dist.	253 Jul 01 j 09:31	7°♄51'07	8.96450 AU
	247 Apr 23 j 14:06	30°♄		desc. node	253 Jul 15 j 08:30	6°♄50'04	
direct	247 Jul 02 j 00:15	26°♄47'39		direct	253 Sep 09 j 02:35	4°♄34'25	
	247 Sep 05 j 12:58	0°♄		evening set	253 Dec 17 j 22:36	11°♄36'58	
evening set	247 Oct 13 j 01:08	3°♄56'01					
				conjunction	254 Jan 03 j 14:55	13°♄35'50	0°-12'-50
conjunction	247 Oct 29 j 16:16	5°♄52'35	2°03'20	minimum elong	254 Jan 03 j 14:55	13°♄35'50	0°12'51
minimum elong	247 Oct 29 j 16:18	5°♄52'35	2°03'21	behind sun begin	254 Jan 03 j 10:30	13°♄34'31	
max. Earth dist.	247 Oct 29 j 11:27	5°♄51'10	11.06378 AU	behind sun end	254 Jan 03 j 19:20	13°♄37'08	
morning rise	247 Nov 15 j 04:50	7°♄48'26		max. Earth dist.	254 Jan 03 j 06:24	13°♄33'17	10.92123 AU
retrograde	248 Feb 22 j 17:18	14°♄43'57		morning rise	254 Jan 20 j 09:29	15°♄35'27	
opposition	248 May 02 j 16:33	11°♄27'11	2°22'10	retrograde	254 May 03 j 14:29	22°♄52'37	
min. Earth dist.	248 May 02 j 21:22	11°♄26'18	9.08589 AU	opposition	254 Jul 13 j 11:37	19°♄31'40	0°-33'-4
direct	248 Jul 13 j 01:44	8°♄07'13		min. Earth dist.	254 Jul 13 j 18:37	19°♄30'22	8.87254 AU
	248 Oct 21 j 19:04	15°♄		direct	254 Sep 21 j 00:18	16°♄13'09	
evening set	248 Oct 23 j 09:54	15°♄11'06		evening set	254 Dec 29 j 16:54	23°♄20'11	
conjunction	248 Nov 08 j 23:45	17°♄06'59	1°48'27	conjunction	255 Jan 15 j 10:55	25°♄20'46	0°-40'-40
minimum elong	248 Nov 08 j 23:48	17°♄07'00	1°48'27	minimum elong	255 Jan 15 j 10:53	25°♄20'46	0°40'41
max. Earth dist.	248 Nov 08 j 17:32	17°♄05'09	11.09950 AU	max. Earth dist.	255 Jan 15 j 02:38	25°♄18'17	10.82042 AU
morning rise	248 Nov 25 j 11:56	19°♄02'23		morning rise	255 Feb 01 j 07:52	27°♄22'20	
retrograde	249 Mar 05 j 08:08	25°♄57'37			255 Feb 24 j 14:16	0°♄	
opposition	249 May 14 j 16:17	22°♄40'48	2°01'21	retrograde	255 May 16 j 10:31	4°♄48'20	
min. Earth dist.	249 May 14 j 21:41	22°♄39'49	9.10956 AU	opposition	255 Jul 26 j 02:47	1°♄25'56	-1°-6'-51
direct	249 Jul 24 j 23:10	19°♄21'42		min. Earth dist.	255 Jul 26 j 09:07	1°♄24'44	8.76401 AU
evening set	249 Nov 03 j 15:44	26°♄22'23			255 Aug 14 j 16:42	30°♄	
				direct	255 Oct 03 j 02:42	28°♄06'44	
conjunction	249 Nov 20 j 05:12	28°♄18'02	1°29'29		255 Nov 19 j 14:31	0°♄	
minimum elong	249 Nov 20 j 05:14	28°♄18'03	1°29'28	evening set	256 Jan 10 j 18:42	5°♄19'43	
max. Earth dist.	249 Nov 19 j 22:46	28°♄16'09	11.11150 AU				
	249 Dec 04 j 18:47	0°♄		conjunction	256 Jan 27 j 14:40	7°♄22'21	-1°-7'-19
morning rise	249 Dec 06 j 17:33	0°♄13'27		minimum elong	256 Jan 27 j 14:38	7°♄22'20	1°07'20
retrograde	250 Mar 17 j 02:21	7°♄09'58		max. Earth dist.	256 Jan 27 j 06:27	7°♄19'50	10.70532 AU
opposition	250 May 26 j 16:02	3°♄52'50	1°35'59	morning rise	256 Feb 13 j 14:28	9°♄26'10	
min. Earth dist.	250 May 26 j 21:38	3°♄51'48	9.10904 AU		256 Apr 07 j 23:28	15°♄	
direct	250 Aug 05 j 19:08	0°♄34'22		retrograde	256 May 28 j 13:46	17°♄01'57	
evening set	250 Nov 14 j 20:39	7°♄33'13			256 Jul 19 j 14:04	15°♄	
				opposition	256 Aug 06 j 23:41	13°♄37'59	-1°-38'-33
conjunction	250 Dec 01 j 10:08	9°♄29'05	1°07'06	min. Earth dist.	256 Aug 07 j 05:34	13°♄36'51	8.64389 AU
minimum elong	250 Dec 01 j 10:10	9°♄29'06	1°07'05	direct	256 Oct 14 j 09:18	10°♄17'51	
max. Earth dist.	250 Dec 01 j 03:06	9°♄27'01	11.09918 AU		256 Dec 30 j 10:31	15°♄	
morning rise	250 Dec 17 j 23:18	11°♄24'57		evening set	257 Jan 22 j 05:30	17°♄38'09	
retrograde	251 Mar 28 j 22:53	18°♄24'16					
opposition	251 Jun 07 j 16:54	15°♄06'34	1°06'54	conjunction	257 Feb 08 j 03:53	19°♄43'03	-1°-31'-31
min. Earth dist.	251 Jun 07 j 23:30	15°♄05'22	9.08425 AU	minimum elong	257 Feb 08 j 03:50	19°♄43'02	1°31'32
direct	251 Aug 17 j 11:51	11°♄48'30		max. Earth dist.	257 Feb 07 j 20:35	19°♄40'47	10.58116 AU
evening set	251 Nov 26 j 02:20	18°♄46'59		morning rise	257 Feb 25 j 06:42	21°♄49'20	
				retrograde	257 Jun 10 j 23:58	29°♄35'28	
conjunction	251 Dec 12 j 16:13	20°♄43'27	0°42'02	opposition	257 Aug 20 j 02:35	26°♄09'53	-2°-6'-32
minimum elong	251 Dec 12 j 16:15	20°♄43'28	0°42'02	min. Earth dist.	257 Aug 20 j 07:39	26°♄08'54	8.51771 AU
max. Earth dist.	251 Dec 12 j 07:45	20°♄40'58	11.06283 AU	direct	257 Oct 26 j 23:46	22°♄48'39	
morning rise	251 Dec 29 j 06:53	22°♄40'12			258 Feb 01 j 17:33	0°♄	
retrograde	252 Apr 08 j 21:28	29°♄43'54		evening set	258 Feb 04 j 02:12	0°♄17'19	
opposition	252 Jun 18 j 19:49	26°♄25'21	0°35'00				
min. Earth dist.	252 Jun 19 j 03:25	26°♄23'57	9.03578 AU	conjunction	258 Feb 21 j 03:33	2°♄24'44	-1°-51'-54
direct	252 Aug 28 j 06:06	23°♄07'22		minimum elong	258 Feb 21 j 03:30	2°♄24'43	1°51'55
	252 Dec 05 j 09:56	0°♄		max. Earth dist.	258 Feb 20 j 22:32	2°♄23'10	10.45373 AU
evening set	252 Dec 06 j 10:20	0°♄07'04		morning rise	258 Mar 10 j 09:34	4°♄33'38	
				retrograde	258 Jun 24 j 18:47	12°♄30'14	
conjunction	252 Dec 23 j 01:13	2°♄04'33	0°15'07	opposition	258 Sep 02 j 12:01	9°♄03'06	-2°-29'-6
minimum elong	252 Dec 23 j 01:13	2°♄04'33	0°15'07	min. Earth dist.	258 Sep 02 j 15:09	9°♄02'29	8.39146 AU



direct	258 Nov 08 j 22:07	5° <del>✕</del> 40'38		direct	265 Jan 29 j 14:46	29° <del>♄</del> 08'52	
evening set	259 Feb 17 j 09:31	13° <del>✕</del> 18'17			265 Feb 28 j 22:16	0° <del>♄</del>	
				evening set	265 May 14 j 07:41	7° <del>♄</del> 25'48	
conjunction	259 Mar 06 j 14:20	15° <del>✕</del> 28'24	-2°-7'-8				
minimum elong	259 Mar 06 j 14:18	15° <del>✕</del> 28'23	2°07'08	conjunction	265 Jun 01 j 12:00	9° <del>♄</del> 47'42	-1°-5'-48
max. Earth dist.	259 Mar 06 j 11:57	15° <del>✕</del> 27'39	10.32932 AU	minimum elong	265 Jun 01 j 12:03	9° <del>♄</del> 47'43	1°05'49
morning rise	259 Mar 23 j 23:52	17° <del>✕</del> 40'03		max. Earth dist.	265 Jun 01 j 20:58	9° <del>♄</del> 50'38	9.98045 AU
retrograde	259 Jul 08 j 23:07	25° <del>✕</del> 46'31		morning rise	265 Jun 19 j 16:44	12° <del>♄</del> 09'42	
opposition	259 Sep 16 j 03:46	22° <del>✕</del> 17'58	-2°-44'-30	retrograde	265 Oct 02 j 17:48	20° <del>♄</del> 27'43	
min. Earth dist.	259 Sep 16 j 04:40	22° <del>✕</del> 17'47	8.27147 AU	opposition	265 Dec 08 j 09:42	16° <del>♄</del> 58'21	-1°-2'-50
direct	259 Nov 22 j 02:08	18° <del>✕</del> 54'13		min. Earth dist.	265 Dec 08 j 02:08	16° <del>♄</del> 59'55	7.99831 AU
evening set	260 Mar 02 j 04:01	26° <del>✕</del> 41'07		direct	266 Feb 13 j 06:12	13° <del>♄</del> 28'39	
				evening set	266 May 29 j 13:28	21° <del>♄</del> 45'22	
conjunction	260 Mar 19 j 12:46	28° <del>✕</del> 53'58	-2°-15'-54				
minimum elong	260 Mar 19 j 12:45	28° <del>✕</del> 53'58	2°15'54	conjunction	266 Jun 16 j 18:43	24° <del>♄</del> 06'47	0°-33'-59
max. Earth dist.	260 Mar 19 j 12:39	28° <del>✕</del> 53'56	10.21443 AU	minimum elong	266 Jun 16 j 18:45	24° <del>♄</del> 06'48	0°34'00
	260 Mar 28 j 02:41	0° <del>♄</del>		max. Earth dist.	266 Jun 17 j 04:58	24° <del>♄</del> 10'07	10.02321 AU
morning rise	260 Apr 06 j 02:09	1° <del>♄</del> 08'22		morning rise	266 Jul 04 j 22:54	26° <del>♄</del> 27'52	
retrograde	260 Jul 22 j 09:40	9° <del>♄</del> 23'19			266 Aug 03 j 08:46	0° <del>♄</del>	
opposition	260 Sep 29 j 01:12	5° <del>♄</del> 53'39	-2°-51'-14	retrograde	266 Oct 17 j 00:31	4° <del>♄</del> 38'23	
min. Earth dist.	260 Sep 29 j 00:07	5° <del>♄</del> 53'52	8.16412 AU	opposition	266 Dec 22 j 13:32	1° <del>♄</del> 10'15	0°-21'-43
direct	260 Dec 04 j 14:30	2° <del>♄</del> 28'33		min. Earth dist.	266 Dec 22 j 05:24	1° <del>♄</del> 11'56	8.05519 AU
evening set	261 Mar 16 j 09:06	10° <del>♄</del> 24'25			267 Jan 06 j 00:35	30° <del>♄</del>	
				direct	267 Feb 27 j 20:47	27° <del>♄</del> 40'27	
conjunction	261 Apr 02 j 22:09	12° <del>♄</del> 39'57	-2°-17'-13		267 Apr 20 j 17:28	0° <del>♄</del>	
minimum elong	261 Apr 02 j 22:10	12° <del>♄</del> 39'58	2°17'13	evening set	267 Jun 13 j 15:51	5° <del>♄</del> 54'43	
max. Earth dist.	261 Apr 02 j 23:47	12° <del>♄</del> 40'29	10.11553 AU				
morning rise	261 Apr 20 j 15:38	14° <del>♄</del> 56'57		conjunction	267 Jul 01 j 20:12	8° <del>♄</del> 14'43	0°00'-28
retrograde	261 Aug 06 j 00:46	23° <del>♄</del> 18'18		minimum elong	267 Jul 01 j 20:13	8° <del>♄</del> 14'43	0°00'29
opposition	261 Oct 13 j 03:44	19° <del>♄</del> 47'51	-2°-48'-10	behind sun begin	267 Jul 01 j 12:53	8° <del>♄</del> 12'22	
min. Earth dist.	261 Oct 13 j 01:14	19° <del>♄</del> 48'22	8.07561 AU	behind sun end	267 Jul 02 j 03:34	8° <del>♄</del> 17'04	
direct	261 Dec 18 j 11:19	16° <del>♄</del> 21'28		max. Earth dist.	267 Jul 02 j 06:44	8° <del>♄</del> 18'06	10.09410 AU
evening set	262 Mar 30 j 23:29	24° <del>♄</del> 25'19		asc. node	267 Jul 07 j 03:41	8° <del>♄</del> 55'53	
				morning rise	267 Jul 19 j 22:10	10° <del>♄</del> 33'57	
conjunction	262 Apr 17 j 17:03	26° <del>♄</del> 43'19	-2°-10'-29	retrograde	267 Oct 31 j 00:25	18° <del>♄</del> 35'25	
minimum elong	262 Apr 17 j 17:06	26° <del>♄</del> 43'20	2°10'29	opposition	268 Jan 05 j 13:07	15° <del>♄</del> 08'46	0°19'58
max. Earth dist.	262 Apr 17 j 20:34	26° <del>♄</del> 44'28	10.03859 AU	min. Earth dist.	268 Jan 05 j 05:14	15° <del>♄</del> 10'23	8.13827 AU
morning rise	262 May 05 j 14:34	29° <del>♄</del> 02'35		direct	268 Mar 13 j 08:11	11° <del>♄</del> 39'14	
	262 May 13 j 04:05	0° <del>♄</del>		evening set	268 Jun 27 j 12:03	19° <del>♄</del> 49'01	
retrograde	262 Aug 20 j 18:25	7° <del>♄</del> 27'41					
opposition	262 Oct 27 j 09:59	3° <del>♄</del> 56'52	-2°-34'-54	conjunction	268 Jul 15 j 13:42	22° <del>♄</del> 06'46	0°32'32
min. Earth dist.	262 Oct 27 j 06:17	3° <del>♄</del> 57'38	8.01145 AU	minimum elong	268 Jul 15 j 13:40	22° <del>♄</del> 06'46	0°32'33
direct	263 Jan 01 j 15:26	0° <del>♄</del> 29'18		max. Earth dist.	268 Jul 15 j 23:36	22° <del>♄</del> 09'56	10.18848 AU
evening set	263 Apr 14 j 21:47	8° <del>♄</del> 39'35		morning rise	268 Aug 02 j 11:54	24° <del>♄</del> 23'25	
					268 Sep 23 j 02:33	0° <del>♄</del>	
conjunction	263 May 02 j 19:47	10° <del>♄</del> 59'38	-1°-55'-44	retrograde	268 Nov 12 j 16:20	2° <del>♄</del> 15'01	
minimum elong	263 May 02 j 19:50	10° <del>♄</del> 59'39	1°55'44		269 Jan 03 j 14:26	30° <del>♄</del>	
max. Earth dist.	263 May 03 j 01:13	11° <del>♄</del> 01'25	9.98852 AU	opposition	269 Jan 18 j 07:17	28° <del>♄</del> 49'59	0°59'35
morning rise	263 May 20 j 20:51	13° <del>♄</del> 20'38		min. Earth dist.	269 Jan 18 j 00:19	28° <del>♄</del> 51'24	8.24233 AU
	263 Jun 03 j 00:46	15° <del>♄</del>		direct	269 Mar 27 j 16:09	25° <del>♄</del> 20'59	
retrograde	263 Sep 04 j 12:35	21° <del>♄</del> 46'21			269 Jun 12 j 18:41	0° <del>♄</del>	
opposition	263 Nov 10 j 18:08	18° <del>♄</del> 15'36	-2°-11'-53	evening set	269 Jul 11 j 23:45	3° <del>♄</del> 24'41	
min. Earth dist.	263 Nov 10 j 13:15	18° <del>♄</del> 16'37	7.97587 AU				
	263 Dec 31 j 22:50	15° <del>♄</del>		conjunction	269 Jul 29 j 21:20	5° <del>♄</del> 39'35	1°03'01
direct	264 Jan 16 j 00:56	14° <del>♄</del> 47'01		minimum elong	269 Jul 29 j 21:18	5° <del>♄</del> 39'34	1°03'02
	264 Jan 31 j 02:30	15° <del>♄</del>		max. Earth dist.	269 Jul 30 j 05:44	5° <del>♄</del> 42'14	10.30057 AU
evening set	264 Apr 29 j 01:30	23° <del>♄</del> 01'48		morning rise	269 Aug 16 j 14:48	7° <del>♄</del> 53'10	
					269 Oct 31 j 18:39	15° <del>♄</del>	
conjunction	264 May 17 j 03:17	25° <del>♄</del> 23'12	-1°-33'-42	retrograde	269 Nov 25 j 22:16	15° <del>♄</del> 34'40	
minimum elong	264 May 17 j 03:21	25° <del>♄</del> 23'14	1°33'42		269 Dec 21 j 06:08	15° <del>♄</del>	
max. Earth dist.	264 May 17 j 10:31	25° <del>♄</del> 25'35	9.96868 AU	opposition	270 Jan 31 j 19:20	12° <del>♄</del> 11'16	1°34'53
morning rise	264 Jun 04 j 06:55	27° <del>♄</del> 45'10		min. Earth dist.	270 Jan 31 j 13:29	12° <del>♄</del> 12'26	8.36113 AU
	264 Jun 22 j 07:23	0° <del>♄</del>		direct	270 Apr 10 j 19:05	8° <del>♄</del> 43'05	
retrograde	264 Sep 18 j 05:17	6° <del>♄</del> 08'25			270 Jul 12 j 04:27	15° <del>♄</del>	
opposition	264 Nov 24 j 02:39	2° <del>♄</del> 38'10	-1°-40'-27	evening set	270 Jul 26 j 01:23	16° <del>♄</del> 39'28	
min. Earth dist.	264 Nov 23 j 20:28	2° <del>♄</del> 39'27	7.97133 AU				
	264 Dec 30 j 03:30	30° <del>♄</del>		conjunction	270 Aug 12 j 18:04	18° <del>♄</del> 51'11	1°29'27



minimum elong	270 Aug 12 j 18:01	18°♏51'10	1°29'27	morning rise	276 Nov 09 j 16:28	3°♍10'40	
max. Earth dist.	270 Aug 13 j 00:26	18°♏53'10	10.42380 AU	retrograde	277 Feb 17 j 03:11	10°♍07'15	
morning rise	270 Aug 30 j 06:15	21°♏01'28		opposition	277 Apr 27 j 21:08	6°♍50'30	2°29'29
retrograde	270 Dec 08 j 19:20	28°♏33'12		min. Earth dist.	277 Apr 28 j 01:29	6°♍49'42	9.06316 AU
opposition	271 Feb 14 j 01:03	25°♏11'22	2°04'14	direct	277 Jul 08 j 07:15	3°♍30'10	
min. Earth dist.	271 Feb 13 j 20:00	25°♏12'22	8.48767 AU	evening set	277 Oct 18 j 22:17	10°♍36'21	
direct	271 Apr 24 j 15:39	21°♏44'12					
evening set	271 Aug 08 j 16:07	29°♏32'30		conjunction	277 Nov 04 j 12:52	12°♍32'37	1°55'20
	271 Aug 12 j 10:55	0°♐		minimum elong	277 Nov 04 j 12:55	12°♍32'37	1°55'20
				max. Earth dist.	277 Nov 04 j 06:52	12°♍30'51	11.07931 AU
conjunction	271 Aug 26 j 03:35	1°♐40'57	1°50'42	morning rise	277 Nov 21 j 01:04	14°♍28'16	
minimum elong	271 Aug 26 j 03:32	1°♐40'56	1°50'42		277 Nov 25 j 16:15	15°♍	
max. Earth dist.	271 Aug 26 j 08:21	1°♐42'26	10.55115 AU	retrograde	278 Feb 28 j 18:48	21°♍23'55	
morning rise	271 Sep 12 j 10:14	3°♐47'56		opposition	278 May 09 j 21:36	18°♍07'04	2°10'52
retrograde	271 Dec 21 j 10:25	11°♐10'39		min. Earth dist.	278 May 10 j 03:34	18°♍05'58	9.09224 AU
opposition	272 Feb 27 j 00:27	7°♐50'12	2°26'37		278 Jul 03 j 23:38	15°♍	
min. Earth dist.	272 Feb 26 j 20:24	7°♐50'59	8.61493 AU	direct	278 Jul 20 j 04:51	14°♍47'27	
direct	272 May 07 j 03:09	4°♐24'12			278 Aug 05 j 09:21	15°♍	
evening set	272 Aug 20 j 19:43	12°♐04'05		evening set	278 Oct 30 j 05:44	21°♍49'55	
conjunction	272 Sep 07 j 02:05	14°♐09'28	2°06'09	conjunction	278 Nov 15 j 19:22	23°♍45'46	1°38'03
minimum elong	272 Sep 07 j 02:03	14°♐09'27	2°06'08	minimum elong	278 Nov 15 j 19:24	23°♍45'47	1°38'03
max. Earth dist.	272 Sep 07 j 05:24	14°♐10'28	10.67578 AU	max. Earth dist.	278 Nov 15 j 11:34	23°♍43'29	11.09694 AU
morning rise	272 Sep 24 j 03:31	16°♐13'22		morning rise	278 Dec 02 j 07:37	25°♍41'17	
retrograde	273 Jan 01 j 17:55	23°♐28'04			279 Jan 13 j 08:14	0°♑	
opposition	273 Mar 10 j 18:02	20°♐08'51	2°41'34	retrograde	279 Mar 12 j 10:30	2°♑37'33	
min. Earth dist.	273 Mar 10 j 15:44	20°♐09'18	8.73613 AU		279 May 12 j 20:11	30°♍	
direct	273 May 20 j 06:53	16°♐44'04		opposition	279 May 21 j 21:45	29°♍20'19	1°47'22
evening set	273 Sep 02 j 12:34	24°♐15'43		min. Earth dist.	279 May 22 j 05:07	29°♍18'58	9.09768 AU
				direct	279 Aug 01 j 02:24	26°♍01'12	
conjunction	273 Sep 19 j 14:16	26°♐18'21	2°15'30		279 Oct 13 j 11:01	0°♑	
minimum elong	273 Sep 19 j 14:15	26°♐18'20	2°15'29	evening set	279 Nov 10 j 11:04	3°♑01'16	
max. Earth dist.	273 Sep 19 j 15:32	26°♐18'43	10.79118 AU				
morning rise	273 Oct 06 j 11:13	28°♐19'36		conjunction	279 Nov 27 j 00:27	4°♑57'10	1°17'03
	273 Oct 21 j 00:24	0°♑		minimum elong	279 Nov 27 j 00:29	4°♑57'11	1°17'02
retrograde	274 Jan 13 j 19:23	5°♑27'37		max. Earth dist.	279 Nov 26 j 15:37	4°♑54'34	11.09088 AU
opposition	274 Mar 23 j 06:24	2°♑09'26	2°49'00	morning rise	279 Dec 13 j 13:26	6°♑52'58	
min. Earth dist.	274 Mar 23 j 06:47	2°♑09'22	8.84517 AU	retrograde	280 Mar 23 j 05:02	13°♑51'28	
	274 Apr 23 j 03:25	30°♍		opposition	280 Jun 01 j 22:21	10°♑33'34	1°19'46
direct	274 Jun 02 j 03:58	28°♐45'52		min. Earth dist.	280 Jun 02 j 05:57	10°♑32'10	9.07942 AU
	274 Jul 11 j 14:50	0°♑		direct	280 Aug 11 j 21:47	7°♑14'47	
evening set	274 Sep 14 j 20:03	6°♑09'55		evening set	280 Nov 20 j 16:21	14°♑13'53	
conjunction	274 Oct 01 j 17:37	8°♑10'12	2°18'47	conjunction	280 Dec 07 j 06:12	16°♑10'15	0°53'02
minimum elong	274 Oct 01 j 17:37	8°♑10'12	2°18'47	minimum elong	280 Dec 07 j 06:14	16°♑10'16	0°53'02
max. Earth dist.	274 Oct 01 j 15:44	8°♑09'38	10.89211 AU	max. Earth dist.	280 Dec 06 j 21:48	16°♑07'47	11.06131 AU
morning rise	274 Oct 18 j 11:02	10°♑09'17		morning rise	280 Dec 23 j 20:16	18°♑06'47	
retrograde	275 Jan 25 j 16:41	17°♑12'02		retrograde	281 Apr 04 j 03:07	25°♑09'02	
opposition	275 Apr 04 j 14:22	13°♑54'39	2°49'09	opposition	281 Jun 14 j 00:17	21°♑50'16	0°48'56
min. Earth dist.	275 Apr 04 j 16:50	13°♑54'11	8.93776 AU	min. Earth dist.	281 Jun 14 j 07:28	21°♑48'56	9.03806 AU
direct	275 Jun 14 j 17:52	10°♑32'17		direct	281 Aug 23 j 15:56	18°♑31'37	
evening set	275 Sep 26 j 19:13	17°♑49'27		evening set	281 Dec 01 j 23:21	25°♑31'18	
conjunction	275 Oct 13 j 13:31	19°♑47'55	2°16'14	conjunction	281 Dec 18 j 14:01	27°♑28'33	0°26'46
minimum elong	275 Oct 13 j 13:32	19°♑47'55	2°16'15	minimum elong	281 Dec 18 j 14:02	27°♑28'33	0°26'47
max. Earth dist.	275 Oct 13 j 09:20	19°♑46'40	10.97533 AU	max. Earth dist.	281 Dec 18 j 05:37	27°♑26'04	11.00917 AU
morning rise	275 Oct 30 j 04:23	21°♑45'21		morning rise	282 Jan 04 j 05:40	29°♑26'10	
retrograde	276 Feb 06 j 09:33	28°♑44'17			282 Jan 09 j 03:15	0°♒	
opposition	276 Apr 15 j 19:01	25°♑27'22	2°42'27	retrograde	282 Apr 16 j 07:12	6°♒33'45	
min. Earth dist.	276 Apr 15 j 22:32	25°♑26'43	9.01116 AU	opposition	282 Jun 26 j 05:02	3°♒13'57	0°15'50
direct	276 Jun 26 j 03:10	22°♑06'06		min. Earth dist.	282 Jun 26 j 12:12	3°♒12'37	8.97497 AU
evening set	276 Oct 07 j 11:18	29°♑17'16			282 Aug 25 j 14:50	30°♍	
	276 Oct 13 j 14:31	0°♒		direct	282 Sep 04 j 10:35	29°♑55'14	
					282 Sep 14 j 04:56	0°♒	
conjunction	276 Oct 24 j 03:23	1°♒14'22	2°08'15	evening set	282 Dec 13 j 09:50	6°♒57'05	
minimum elong	276 Oct 24 j 03:24	1°♒14'23	2°08'16	desc. node	282 Dec 18 j 07:00	7°♒31'29	
max. Earth dist.	276 Oct 23 j 22:19	1°♒12'53	11.03839 AU				



conjunction	282 Dec 30 j 01:33	8°☾55'32	0°00'-53	max. Earth dist.	289 Mar 13 j 22:58	23°☾26'47	10.26450 AU
minimum elong	282 Dec 30 j 01:31	8°☾55'32	0°00'54	morning rise	289 Mar 31 j 11:39	25°☾40'18	
behind sun begin	282 Dec 29 j 18:32	8°☾53'28			289 May 08 j 01:30	0°☾	
behind sun end	282 Dec 30 j 08:30	8°☾57'35		retrograde	289 Jul 16 j 16:44	3°☾51'57	
max. Earth dist.	282 Dec 29 j 16:27	8°☾52'51	10.93623 AU	opposition	289 Sep 23 j 13:54	0°☾23'06	-2°-49'-22
morning rise	283 Jan 15 j 19:16	10°☾54'38		min. Earth dist.	289 Sep 23 j 13:30	0°☾23'11	8.21322 AU
retrograde	283 Apr 28 j 15:11	18°☾09'04			289 Sep 28 j 09:04	30°☾	
opposition	283 Jul 08 j 13:36	14°☾48'03	0°-18'-27	direct	289 Nov 29 j 06:28	26°☾58'58	
min. Earth dist.	283 Jul 08 j 21:03	14°☾46'39	8.89239 AU		290 Jan 27 j 01:30	0°☾	
direct	283 Sep 16 j 07:01	11°☾29'03		evening set	290 Mar 10 j 17:57	4°☾51'11	
evening set	283 Dec 25 j 01:31	18°☾34'39					
conjunction	284 Jan 10 j 18:43	20°☾34'40	0°-28'-54	conjunction	290 Mar 28 j 05:02	7°☾05'31	-2°-17'-29
minimum elong	284 Jan 10 j 18:42	20°☾34'39	0°28'55	minimum elong	290 Mar 28 j 05:02	7°☾05'31	2°17'29
max. Earth dist.	284 Jan 10 j 10:01	20°☾32'03	10.84511 AU	max. Earth dist.	290 Mar 28 j 07:01	7°☾06'10	10.16322 AU
morning rise	284 Jan 27 j 14:51	22°☾35'34		morning rise	290 Apr 14 j 20:44	9°☾21'22	
retrograde	284 May 10 j 06:31	29°☾58'12		retrograde	290 Jul 31 j 05:25	17°☾40'13	
opposition	284 Jul 20 j 02:38	26°☾35'50	0°-52'-41	opposition	290 Oct 07 j 14:45	14°☾10'35	-2°-50'-27
min. Earth dist.	284 Jul 20 j 09:28	26°☾34'33	8.79337 AU	min. Earth dist.	290 Oct 07 j 12:19	14°☾11'05	8.12107 AU
direct	284 Sep 27 j 08:40	23°☾16'21		direct	290 Dec 13 j 00:56	10°☾45'18	
	285 Jan 01 j 04:04	0°☾		evening set	291 Mar 25 j 04:44	18°☾45'41	
evening set	285 Jan 05 j 00:01	0°☾27'13		conjunction	291 Apr 11 j 20:25	21°☾02'34	-2°-14'-8
conjunction	285 Jan 21 j 19:14	2°☾29'08	0°-56'-14	minimum elong	291 Apr 11 j 20:27	21°☾02'34	2°14'08
minimum elong	285 Jan 21 j 19:12	2°☾29'07	0°56'15	max. Earth dist.	291 Apr 12 j 01:08	21°☾04'06	10.08103 AU
max. Earth dist.	285 Jan 21 j 12:04	2°☾26'56	10.73910 AU	morning rise	291 Apr 29 j 16:06	23°☾20'46	
morning rise	285 Feb 07 j 17:52	4°☾32'07			291 Jul 01 j 05:17	0°☾	
retrograde	285 May 23 j 07:07	12°☾04'06		retrograde	291 Aug 14 j 22:26	1°☾44'18	
opposition	285 Aug 01 j 21:07	8°☾40'19	-1°-25'-29	opposition	291 Sep 29 j 06:28	30°☾	
min. Earth dist.	285 Aug 02 j 02:26	8°☾39'18	8.68164 AU	min. Earth dist.	291 Oct 21 j 19:37	28°☾14'11	-2°-41'-26
direct	285 Oct 09 j 13:48	5°☾20'11		direct	291 Oct 21 j 15:15	28°☾15'05	8.05017 AU
evening set	286 Jan 17 j 06:57	12°☾37'42			291 Dec 27 j 01:40	24°☾47'45	
conjunction	286 Feb 03 j 04:24	14°☾41'45	-1°-21'-38	evening set	292 Mar 15 j 04:40	0°☾	
minimum elong	286 Feb 03 j 04:22	14°☾41'44	1°21'40		292 Apr 08 j 00:05	2°☾55'01	
max. Earth dist.	286 Feb 02 j 22:54	14°☾40'03	10.62243 AU	conjunction	292 Apr 25 j 20:17	5°☾14'05	-2°-2'-41
	286 Feb 05 j 15:37	15°☾		minimum elong	292 Apr 25 j 20:20	5°☾14'06	2°02'41
morning rise	286 Feb 20 j 05:45	16°☾47'04		max. Earth dist.	292 Apr 26 j 02:41	5°☾16'10	10.02233 AU
retrograde	286 Jun 05 j 15:23	24°☾29'12		morning rise	292 May 13 j 19:39	7°☾34'12	
opposition	286 Aug 14 j 21:42	21°☾03'58	-1°-55'-16		292 Jul 26 j 12:23	15°☾	
min. Earth dist.	286 Aug 15 j 01:15	21°☾03'17	8.56192 AU	retrograde	292 Aug 28 j 17:37	15°☾59'29	
direct	286 Oct 22 j 00:42	17°☾43'02			292 Oct 01 j 02:28	15°☾	
evening set	287 Jan 29 j 23:38	25°☾08'24		opposition	292 Nov 04 j 02:57	12°☾29'17	-2°-22'-23
conjunction	287 Feb 15 j 23:39	27°☾14'50	-1°-43'-48	min. Earth dist.	292 Nov 03 j 21:31	12°☾30'24	8.00410 AU
minimum elong	287 Feb 15 j 23:36	27°☾14'49	1°43'50	direct	293 Jan 09 j 07:29	9°☾01'47	
max. Earth dist.	287 Feb 15 j 19:12	27°☾13'26	10.50044 AU	evening set	293 Apr 05 j 02:13	15°☾	
morning rise	287 Mar 05 j 04:11	29°☾22'41			293 Apr 23 j 01:41	17°☾14'17	
	287 Mar 10 j 07:15	0°☾		conjunction	293 May 11 j 01:53	19°☾35'00	-1°-43'-35
retrograde	287 Jun 19 j 08:26	7°☾15'15		minimum elong	293 May 11 j 01:57	19°☾35'01	1°43'35
opposition	287 Aug 28 j 04:49	3°☾48'39	-2°-20'-19	max. Earth dist.	293 May 11 j 09:14	19°☾37'25	9.99004 AU
min. Earth dist.	287 Aug 28 j 07:06	3°☾48'12	8.43987 AU	morning rise	293 May 29 j 04:16	21°☾56'26	
direct	287 Nov 03 j 18:29	0°☾26'45			293 Aug 24 j 05:40	0°☾	
evening set	288 Feb 12 j 02:49	8°☾00'49		retrograde	293 Sep 12 j 12:33	0°☾20'34	
conjunction	288 Feb 29 j 05:57	10°☾09'49	-2°-1'-22		293 Oct 01 j 17:30	30°☾	
minimum elong	288 Feb 29 j 05:55	10°☾09'48	2°01'23	opposition	293 Nov 18 j 11:26	26°☾50'42	-1°-54'-18
max. Earth dist.	288 Feb 29 j 02:54	10°☾08'51	10.37905 AU	min. Earth dist.	293 Nov 18 j 05:26	26°☾51'57	7.98549 AU
morning rise	288 Mar 17 j 14:02	12°☾20'21		direct	294 Jan 23 j 19:26	23°☾22'20	
retrograde	288 Jul 02 j 09:46	20°☾23'00			294 Apr 25 j 06:39	0°☾	
opposition	288 Sep 09 j 18:23	16°☾55'10	-2°-38'-53	evening set	294 May 08 j 06:56	1°☾38'06	
min. Earth dist.	288 Sep 09 j 19:31	16°☾54'57	8.32154 AU	conjunction	294 May 26 j 10:12	3°☾59'43	-1°-17'-58
direct	288 Nov 15 j 19:38	13°☾32'11		minimum elong	294 May 26 j 10:16	3°☾59'44	1°17'58
evening set	289 Feb 24 j 17:01	21°☾15'24		max. Earth dist.	294 May 26 j 18:10	4°☾02'20	9.98656 AU
conjunction	289 Mar 13 j 23:51	23°☾27'04	-2°-12'-58	morning rise	294 Jun 13 j 14:30	6°☾21'40	
minimum elong	289 Mar 13 j 23:49	23°☾27'03	2°12'58	retrograde	294 Sep 27 j 03:03	14°☾41'50	
				opposition	294 Dec 02 j 19:18	11°☾12'40	-1°-19'-1
				min. Earth dist.	294 Dec 02 j 13:07	11°☾13'57	7.99655 AU



direct	295 Feb 07 j 10:44	7° $\Pi$ 43'40			301 Apr 03 j 22:36	30° $\mathbb{R}$ $\mathcal{O}$	
evening set	295 May 23 j 13:23	16° $\Pi$ 00'25		direct	301 May 01 j 20:24	29° $\mathcal{O}$ 21'17	
					301 May 29 j 16:52	0° $\mathbb{M}$	
conjunction	295 Jun 10 j 18:15	18° $\Pi$ 22'01	0°-47'-33	evening set	301 Aug 15 j 16:57	7° $\mathbb{M}$ 04'44	
minimum elong	295 Jun 10 j 18:18	18° $\Pi$ 22'02	0°47'34				
max. Earth dist.	295 Jun 11 j 02:24	18° $\Pi$ 24'40	10.01322 AU	conjunction	301 Sep 02 j 01:28	9° $\mathbb{M}$ 11'27	2°00'25
morning rise	295 Jun 28 j 22:53	20° $\Pi$ 43'30		minimum elong	301 Sep 02 j 01:25	9° $\mathbb{M}$ 11'26	2°00'24
retrograde	295 Oct 11 j 11:44	28° $\Pi$ 57'11		max. Earth dist.	301 Sep 02 j 04:45	9° $\mathbb{M}$ 12'28	10.61444 AU
opposition	295 Dec 17 j 00:42	25° $\Pi$ 29'00	0°-39'-4	morning rise	301 Sep 19 j 05:11	11° $\mathbb{M}$ 16'42	
min. Earth dist.	295 Dec 16 j 18:23	25° $\Pi$ 30'19	8.03759 AU	retrograde	301 Dec 27 j 21:56	18° $\mathbb{M}$ 34'39	
direct	296 Feb 22 j 02:39	21° $\Pi$ 59'38		opposition	302 Mar 05 j 18:51	15° $\mathbb{M}$ 14'28	2°36'17
	296 Jun 04 j 18:14	0° $\mathcal{E}$		min. Earth dist.	302 Mar 05 j 16:48	15° $\mathbb{M}$ 14'52	8.67611 AU
evening set	296 Jun 06 j 17:39	0° $\mathcal{E}$ 15'00		direct	302 May 15 j 04:05	11° $\mathbb{M}$ 48'35	
				evening set	302 Aug 28 j 14:06	19° $\mathbb{M}$ 23'45	
conjunction	296 Jun 24 j 22:23	2° $\mathcal{E}$ 35'37	0°-14'-31				
minimum elong	296 Jun 24 j 22:24	2° $\mathcal{E}$ 35'37	0°14'31	conjunction	302 Sep 14 j 17:42	21° $\mathbb{M}$ 27'33	2°12'21
behind sun begin	296 Jun 24 j 19:28	2° $\mathcal{E}$ 34'40		minimum elong	302 Sep 14 j 17:40	21° $\mathbb{M}$ 27'32	2°12'20
behind sun end	296 Jun 25 j 01:21	2° $\mathcal{E}$ 36'33		max. Earth dist.	302 Sep 14 j 18:52	21° $\mathbb{M}$ 27'54	10.73390 AU
max. Earth dist.	296 Jun 25 j 06:38	2° $\mathcal{E}$ 38'16	10.06892 AU	morning rise	302 Oct 01 j 16:42	23° $\mathbb{M}$ 29'57	
morning rise	296 Jul 13 j 01:35	4° $\mathcal{E}$ 55'40			302 Dec 12 j 04:06	0° $\mathcal{E}$	
retrograde	296 Oct 24 j 13:36	13° $\mathcal{E}$ 00'58		retrograde	303 Jan 09 j 00:57	0° $\mathcal{E}$ 40'36	
asc. node	296 Dec 05 j 18:00	11° $\mathcal{E}$ 27'17			303 Feb 06 j 08:52	30° $\mathbb{R}$ $\mathbb{M}$	
opposition	296 Dec 30 j 02:18	9° $\mathcal{E}$ 34'00	0°02'41	opposition	303 Mar 18 j 08:57	27° $\mathbb{M}$ 21'28	2°46'52
min. Earth dist.	296 Dec 29 j 19:35	9° $\mathcal{E}$ 35'23	8.10633 AU	min. Earth dist.	303 Mar 18 j 07:43	27° $\mathbb{M}$ 21'43	8.79152 AU
direct	297 Mar 07 j 16:34	6° $\mathcal{E}$ 04'33		direct	303 May 28 j 05:06	23° $\mathbb{M}$ 56'51	
evening set	297 Jun 21 j 16:32	14° $\mathcal{E}$ 16'17			303 Aug 28 j 20:57	0° $\mathcal{E}$	
				evening set	303 Sep 10 j 01:03	1° $\mathcal{E}$ 23'59	
conjunction	297 Jul 09 j 19:26	16° $\mathcal{E}$ 35'02	0°18'58				
minimum elong	297 Jul 09 j 19:25	16° $\mathcal{E}$ 35'01	0°18'58	conjunction	303 Sep 27 j 00:22	3° $\mathcal{E}$ 25'14	2°18'11
max. Earth dist.	297 Jul 10 j 03:46	16° $\mathcal{E}$ 37'42	10.15015 AU	minimum elong	303 Sep 27 j 00:21	3° $\mathcal{E}$ 25'13	2°18'11
morning rise	297 Jul 27 j 19:31	18° $\mathcal{E}$ 52'50		max. Earth dist.	303 Sep 27 j 00:29	3° $\mathcal{E}$ 25'16	10.84337 AU
retrograde	297 Nov 07 j 08:26	26° $\mathcal{E}$ 48'37		morning rise	303 Oct 13 j 19:16	5° $\mathcal{E}$ 25'12	
opposition	298 Jan 12 j 22:44	23° $\mathcal{E}$ 22'58	0°43'26	retrograde	304 Jan 21 j 00:33	12° $\mathcal{E}$ 29'50	
min. Earth dist.	298 Jan 12 j 15:49	23° $\mathcal{E}$ 24'23	8.19838 AU	opposition	304 Mar 29 j 18:18	9° $\mathcal{E}$ 11'37	2°50'03
direct	298 Mar 22 j 02:34	19° $\mathcal{E}$ 53'45		min. Earth dist.	304 Mar 29 j 18:11	9° $\mathcal{E}$ 11'38	8.89450 AU
evening set	298 Jul 06 j 07:53	28° $\mathcal{E}$ 00'02		direct	304 Jun 08 j 21:11	5° $\mathcal{E}$ 48'18	
	298 Jul 22 j 04:28	0° $\mathcal{O}$		evening set	304 Sep 21 j 03:02	13° $\mathcal{E}$ 07'59	
conjunction	298 Jul 24 j 07:27	0° $\mathcal{O}$ 16'12	0°50'41	conjunction	304 Oct 07 j 22:51	15° $\mathcal{E}$ 07'09	2°18'04
minimum elong	298 Jul 24 j 07:25	0° $\mathcal{O}$ 16'12	0°50'41	minimum elong	304 Oct 07 j 22:51	15° $\mathcal{E}$ 07'09	2°18'05
max. Earth dist.	298 Jul 24 j 15:31	0° $\mathcal{O}$ 18'46	10.25169 AU	max. Earth dist.	304 Oct 07 j 21:48	15° $\mathcal{E}$ 06'50	10.93849 AU
morning rise	298 Aug 11 j 03:08	2° $\mathcal{O}$ 31'08		morning rise	304 Oct 24 j 14:36	17° $\mathcal{E}$ 05'12	
retrograde	298 Nov 20 j 18:27	10° $\mathcal{O}$ 16'51		retrograde	305 Jan 31 j 18:53	24° $\mathcal{E}$ 05'10	
opposition	299 Jan 26 j 13:06	6° $\mathcal{O}$ 52'38	1°20'46	opposition	305 Apr 10 j 23:40	20° $\mathcal{E}$ 47'41	2°46'11
min. Earth dist.	299 Jan 26 j 06:35	6° $\mathcal{O}$ 53'57	8.30788 AU	min. Earth dist.	305 Apr 11 j 01:27	20° $\mathcal{E}$ 47'21	8.98115 AU
direct	299 Apr 05 j 07:33	3° $\mathcal{O}$ 23'56		direct	305 Jun 21 j 06:15	17° $\mathcal{E}$ 25'37	
evening set	299 Jul 20 j 13:48	11° $\mathcal{O}$ 23'24		evening set	305 Oct 02 j 21:27	24° $\mathcal{E}$ 38'44	
conjunction	299 Aug 07 j 08:52	13° $\mathcal{O}$ 36'32	1°18'58	conjunction	305 Oct 19 j 14:27	26° $\mathcal{E}$ 36'17	2°12'21
minimum elong	299 Aug 07 j 08:49	13° $\mathcal{O}$ 36'31	1°18'58	minimum elong	305 Oct 19 j 14:28	26° $\mathcal{E}$ 36'18	2°12'22
max. Earth dist.	299 Aug 07 j 16:11	13° $\mathcal{O}$ 38'50	10.36725 AU	max. Earth dist.	305 Oct 19 j 11:13	26° $\mathcal{E}$ 35'20	11.01568 AU
	299 Aug 18 j 11:22	15° $\mathcal{O}$		morning rise	305 Nov 05 j 04:11	28° $\mathcal{E}$ 32'56	
morning rise	299 Aug 24 j 23:16	15° $\mathcal{O}$ 48'14			305 Nov 18 j 00:23	0° $\mathbb{M}$	
retrograde	299 Dec 03 j 19:46	23° $\mathcal{O}$ 24'02		retrograde	306 Feb 12 j 10:58	5° $\mathbb{M}$ 29'43	
opposition	300 Feb 08 j 21:21	20° $\mathcal{O}$ 01'14	1°52'45	opposition	306 Apr 23 j 02:03	2° $\mathbb{M}$ 12'44	2°35'48
min. Earth dist.	300 Feb 08 j 16:10	20° $\mathcal{O}$ 02'16	8.42831 AU	min. Earth dist.	306 Apr 23 j 05:46	2° $\mathbb{M}$ 12'02	9.04818 AU
direct	300 Apr 18 j 05:50	16° $\mathcal{O}$ 33'17			306 May 25 j 17:27	30° $\mathbb{R}$ $\mathcal{E}$	
evening set	300 Aug 02 j 08:54	24° $\mathcal{O}$ 24'59		direct	306 Jul 03 j 11:29	28° $\mathcal{E}$ 51'49	
					306 Aug 10 j 12:23	0° $\mathbb{M}$	
conjunction	300 Aug 19 j 22:45	26° $\mathcal{O}$ 34'52	1°42'29	evening set	306 Oct 14 j 09:54	5° $\mathbb{M}$ 59'24	
minimum elong	300 Aug 19 j 22:42	26° $\mathcal{O}$ 34'51	1°42'29				
max. Earth dist.	300 Aug 20 j 04:27	26° $\mathcal{O}$ 36'38	10.49026 AU	conjunction	306 Oct 31 j 00:52	7° $\mathbb{M}$ 55'50	2°01'29
morning rise	300 Sep 06 j 07:40	28° $\mathcal{O}$ 43'16		minimum elong	306 Oct 31 j 00:54	7° $\mathbb{M}$ 55'50	2°01'29
	300 Sep 17 j 01:03	0° $\mathbb{M}$		max. Earth dist.	306 Oct 30 j 19:37	7° $\mathbb{M}$ 54'17	11.07211 AU
retrograde	300 Dec 15 j 13:20	6° $\mathbb{M}$ 09'43		morning rise	306 Nov 16 j 13:28	9° $\mathbb{M}$ 51'34	
opposition	301 Feb 20 j 23:15	2° $\mathbb{M}$ 48'17	2°18'10		307 Jan 08 j 00:39	15° $\mathbb{M}$	
min. Earth dist.	301 Feb 20 j 19:46	2° $\mathbb{M}$ 48'58	8.55314 AU	retrograde	307 Feb 24 j 01:20	16° $\mathbb{M}$ 46'41	



	307 Apr 13 j 22:32	15° $\mathbb{M}$		morning rise	313 Jan 21 j 17:18	17° $\mathfrak{Z}$ 36'44	
opposition	307 May 05 j 02:24	13° $\mathbb{M}$ 29'54	2°19'31	retrograde	313 May 05 j 00:24	24° $\mathfrak{Z}$ 54'17	
min. Earth dist.	307 May 05 j 06:54	13° $\mathbb{M}$ 29'05	9.09320 AU	opposition	313 Jul 14 j 20:48	21° $\mathfrak{Z}$ 33'17	0°-37'-30
direct	307 Jul 15 j 11:48	10° $\mathbb{M}$ 10'02		min. Earth dist.	313 Jul 15 j 03:39	21° $\mathfrak{Z}$ 32'00	8.86945 AU
	307 Oct 05 j 14:08	15° $\mathbb{M}$		direct	313 Sep 22 j 08:50	18° $\mathfrak{Z}$ 14'46	
evening set	307 Oct 25 j 17:56	17° $\mathbb{M}$ 13'15		evening set	313 Dec 31 j 00:50	25° $\mathfrak{Z}$ 21'56	
conjunction	307 Nov 11 j 07:51	19° $\mathbb{M}$ 09'02	1°46'01	conjunction	314 Jan 16 j 18:52	27° $\mathfrak{Z}$ 22'36	0°-44'-10
minimum elong	307 Nov 11 j 07:53	19° $\mathbb{M}$ 09'03	1°46'01	minimum elong	314 Jan 16 j 18:51	27° $\mathfrak{Z}$ 22'36	0°44'11
max. Earth dist.	307 Nov 11 j 02:09	19° $\mathbb{M}$ 07'22	11.10584 AU	max. Earth dist.	314 Jan 16 j 09:55	27° $\mathfrak{Z}$ 19'54	10.81670 AU
morning rise	307 Nov 27 j 19:58	21° $\mathbb{M}$ 04'22		morning rise	314 Feb 02 j 16:05	29° $\mathfrak{Z}$ 24'16	
retrograde	308 Mar 06 j 17:58	27° $\mathbb{M}$ 59'22			314 Feb 07 j 17:49	0° $\approx$	
opposition	308 May 16 j 01:51	24° $\mathbb{M}$ 42'32	1°58'03	retrograde	314 May 17 j 20:40	6° $\approx$ 50'42	
min. Earth dist.	308 May 16 j 06:44	24° $\mathbb{M}$ 41'38	9.11476 AU	opposition	314 Jul 27 j 12:07	3° $\approx$ 28'16	-1°-11'00
direct	308 Jul 26 j 09:33	21° $\mathbb{M}$ 23'31		min. Earth dist.	314 Jul 27 j 19:03	3° $\approx$ 26'57	8.75965 AU
evening set	308 Nov 04 j 23:17	28° $\mathbb{M}$ 23'38		direct	314 Oct 04 j 09:57	0° $\approx$ 09'04	
	308 Nov 18 j 19:05	0° $\mathfrak{X}$		evening set	315 Jan 12 j 03:04	7° $\approx$ 22'22	
conjunction	308 Nov 21 j 12:48	0° $\mathfrak{X}$ 19'15	1°26'34	conjunction	315 Jan 28 j 23:07	9° $\approx$ 25'05	-1°-10'-31
minimum elong	308 Nov 21 j 12:50	0° $\mathfrak{X}$ 19'16	1°26'33	minimum elong	315 Jan 28 j 23:05	9° $\approx$ 25'04	1°10'32
max. Earth dist.	308 Nov 21 j 06:38	0° $\mathfrak{X}$ 17'27	11.11569 AU	max. Earth dist.	315 Jan 28 j 14:32	9° $\approx$ 22'27	10.70029 AU
morning rise	308 Dec 08 j 01:11	2° $\mathfrak{X}$ 14'38		morning rise	315 Feb 14 j 23:08	11° $\approx$ 29'00	
retrograde	309 Mar 18 j 11:20	9° $\mathfrak{X}$ 11'02			315 Mar 18 j 10:04	15° $\approx$	
opposition	309 May 28 j 01:24	5° $\mathfrak{X}$ 53'54	1°32'10	retrograde	315 May 30 j 22:25	19° $\approx$ 05'23	
min. Earth dist.	309 May 28 j 07:15	5° $\mathfrak{X}$ 52'50	9.11211 AU	opposition	315 Aug 09 j 09:19	15° $\approx$ 41'22	-1°-42'-14
direct	309 Aug 07 j 02:48	2° $\mathfrak{X}$ 35'31		min. Earth dist.	315 Aug 09 j 15:40	15° $\approx$ 40'09	8.63825 AU
evening set	309 Nov 16 j 04:01	9° $\mathfrak{X}$ 33'57			315 Aug 18 j 10:39	15° $\mathbb{R}$ $\approx$	
				direct	315 Oct 16 j 18:38	12° $\approx$ 21'14	
conjunction	309 Dec 02 j 17:28	11° $\mathfrak{X}$ 29'48	1°03'48		315 Dec 12 j 00:12	15° $\approx$	
minimum elong	309 Dec 02 j 17:30	11° $\mathfrak{X}$ 29'49	1°03'48	evening set	316 Jan 24 j 14:25	19° $\approx$ 41'59	
max. Earth dist.	309 Dec 02 j 09:42	11° $\mathfrak{X}$ 27'31	11.10129 AU				
morning rise	309 Dec 19 j 06:52	13° $\mathfrak{X}$ 25'41		conjunction	316 Feb 10 j 13:03	21° $\approx$ 47'01	-1°-34'-15
retrograde	310 Mar 30 j 06:05	20° $\mathfrak{X}$ 25'03		minimum elong	316 Feb 10 j 13:00	21° $\approx$ 47'01	1°34'16
opposition	310 Jun 09 j 02:01	17° $\mathfrak{X}$ 07'20	1°02'42	max. Earth dist.	316 Feb 10 j 06:15	21° $\approx$ 44'55	10.57489 AU
min. Earth dist.	310 Jun 09 j 09:14	17° $\mathfrak{X}$ 06'00	9.08532 AU	morning rise	316 Feb 27 j 16:01	23° $\approx$ 53'26	
direct	310 Aug 18 j 20:17	13° $\mathfrak{X}$ 49'18			316 Apr 28 j 02:25	0° $\mathfrak{H}$	
evening set	310 Nov 27 j 09:35	20° $\mathfrak{X}$ 47'35		retrograde	316 Jun 12 j 10:14	1° $\mathfrak{H}$ 40'17	
					316 Jul 28 j 17:55	30° $\mathbb{R}$ $\approx$	
conjunction	310 Dec 13 j 23:33	22° $\mathfrak{X}$ 44'04	0°38'29	opposition	316 Aug 21 j 12:33	28° $\approx$ 14'38	-2°-9'-35
minimum elong	310 Dec 13 j 23:34	22° $\mathfrak{X}$ 44'04	0°38'29	min. Earth dist.	316 Aug 21 j 17:25	28° $\approx$ 13'41	8.51098 AU
max. Earth dist.	310 Dec 13 j 14:56	22° $\mathfrak{X}$ 41'32	11.06303 AU	direct	316 Oct 28 j 09:52	24° $\approx$ 53'23	
morning rise	310 Dec 30 j 14:26	24° $\mathfrak{X}$ 40'51			317 Jan 16 j 09:09	0° $\mathfrak{H}$	
	311 Feb 23 j 02:37	0° $\mathfrak{Z}$		evening set	317 Feb 05 j 11:56	2° $\mathfrak{H}$ 22'36	
retrograde	311 Apr 11 j 06:39	1° $\mathfrak{Z}$ 44'45					
	311 May 30 j 01:49	30° $\mathbb{R}$ $\mathfrak{X}$		conjunction	317 Feb 22 j 13:36	4° $\mathfrak{H}$ 30'12	-1°-54'-2
opposition	311 Jun 21 j 04:54	28° $\mathfrak{X}$ 26'10	0°30'34	minimum elong	317 Feb 22 j 13:33	4° $\mathfrak{H}$ 30'11	1°54'03
min. Earth dist.	311 Jun 21 j 12:20	28° $\mathfrak{X}$ 24'48	9.03509 AU	max. Earth dist.	317 Feb 22 j 09:02	4° $\mathfrak{H}$ 28'46	10.44648 AU
direct	311 Aug 30 j 15:26	25° $\mathfrak{X}$ 08'14		morning rise	317 Mar 11 j 19:46	6° $\mathfrak{H}$ 39'17	
	311 Nov 19 j 15:56	0° $\mathfrak{Z}$		retrograde	317 Jun 26 j 07:25	14° $\mathfrak{H}$ 36'36	
evening set	311 Dec 08 j 17:34	2° $\mathfrak{Z}$ 07'49		opposition	317 Sep 03 j 22:23	11° $\mathfrak{H}$ 09'23	-2°-31'-18
				min. Earth dist.	317 Sep 04 j 01:04	11° $\mathfrak{H}$ 08'52	8.38393 AU
conjunction	311 Dec 25 j 08:39	4° $\mathfrak{Z}$ 05'21	0°11'27	direct	317 Nov 10 j 06:43	7° $\mathfrak{H}$ 46'54	
minimum elong	311 Dec 25 j 08:39	4° $\mathfrak{Z}$ 05'21	0°11'27	evening set	318 Feb 18 j 20:11	15° $\mathfrak{H}$ 25'14	
behind sun begin	311 Dec 25 j 03:32	4° $\mathfrak{Z}$ 03'51					
behind sun end	311 Dec 25 j 13:46	4° $\mathfrak{Z}$ 06'51		conjunction	318 Mar 08 j 01:15	17° $\mathfrak{H}$ 35'31	-2°-8'-30
max. Earth dist.	311 Dec 25 j 00:24	4° $\mathfrak{Z}$ 02'55	11.00171 AU	minimum elong	318 Mar 08 j 01:13	17° $\mathfrak{H}$ 35'31	2°08'31
morning rise	312 Jan 11 j 01:16	6° $\mathfrak{Z}$ 03'24		max. Earth dist.	318 Mar 07 j 22:37	17° $\mathfrak{H}$ 34'41	10.32151 AU
retrograde	312 Apr 22 j 11:42	13° $\mathfrak{Z}$ 13'24		morning rise	318 Mar 25 j 11:01	19° $\mathfrak{H}$ 47'22	
desc. node	312 May 27 j 23:21	12° $\mathfrak{Z}$ 15'19		retrograde	318 Jul 10 j 11:51	27° $\mathfrak{H}$ 54'31	
opposition	312 Jul 02 j 10:51	9° $\mathfrak{Z}$ 53'41	0°-3'-12	opposition	318 Sep 17 j 14:40	24° $\mathfrak{H}$ 25'55	-2°-45'-42
min. Earth dist.	312 Jul 02 j 17:51	9° $\mathfrak{Z}$ 52'23	8.96250 AU	min. Earth dist.	318 Sep 17 j 15:29	24° $\mathfrak{H}$ 25'46	8.26364 AU
direct	312 Sep 10 j 10:36	6° $\mathfrak{Z}$ 35'35		direct	318 Nov 23 j 11:44	21° $\mathfrak{H}$ 02'06	
evening set	312 Dec 19 j 06:09	13° $\mathfrak{Z}$ 38'08		evening set	319 Mar 04 j 15:34	28° $\mathfrak{H}$ 49'45	
					319 Mar 13 j 20:48	0° $\mathbb{Y}$	
conjunction	313 Jan 04 j 22:36	15° $\mathfrak{Z}$ 37'04	0°-16'-29				
minimum elong	313 Jan 04 j 22:36	15° $\mathfrak{Z}$ 37'03	0°16'30	conjunction	319 Mar 22 j 00:33	1° $\mathbb{Y}$ 02'48	-2°-16'-24
max. Earth dist.	313 Jan 04 j 14:22	15° $\mathfrak{Z}$ 34'37	10.91868 AU	minimum elong	319 Mar 22 j 00:32	1° $\mathbb{Y}$ 02'48	2°16'24



max. Earth dist.	319 Mar 21 j 23:38	1°♊02'31	10.20671 AU	opposition	325 Dec 24 j 01:49	3°♊22'55	0°-16'-36
morning rise	319 Apr 08 j 14:19	3°♊17'24		min. Earth dist.	325 Dec 23 j 18:00	3°♊24'32	8.05821 AU
retrograde	319 Jul 24 j 22:01	11°♊32'57			326 Feb 18 j 04:38	30°♊II	
opposition	319 Oct 01 j 12:42	8°♊03'15	-2°-51'-17	direct	326 Mar 01 j 08:52	29°♊II53'04	
min. Earth dist.	319 Oct 01 j 12:05	8°♊03'23	8.15666 AU		326 Mar 12 j 14:44	0°♊	
direct	319 Dec 07 j 01:35	4°♊38'04		asc. node	326 May 23 j 08:36	5°♊20'34	
evening set	320 Mar 17 j 21:30	12°♊34'40		evening set	326 Jun 15 j 06:00	8°♊07'12	
conjunction	320 Apr 04 j 10:53	14°♊50'25	-2°-16'-45	conjunction	326 Jul 03 j 10:08	10°♊27'06	0°03'42
minimum elong	320 Apr 04 j 10:54	14°♊50'26	2°16'46	minimum elong	326 Jul 03 j 10:07	10°♊27'06	0°03'42
max. Earth dist.	320 Apr 04 j 11:48	14°♊50'43	10.10854 AU	behind sun begin	326 Jul 03 j 02:50	10°♊24'46	
morning rise	320 Apr 22 j 04:50	17°♊07'38		behind sun end	326 Jul 03 j 17:24	10°♊29'25	
retrograde	320 Aug 07 j 13:17	25°♊29'24		max. Earth dist.	326 Jul 03 j 20:14	10°♊30'20	10.09805 AU
opposition	320 Oct 14 j 15:41	21°♊58'58	-2°-47'-1	morning rise	326 Jul 21 j 11:50	12°♊46'12	
min. Earth dist.	320 Oct 14 j 13:50	21°♊59'21	8.06914 AU	retrograde	326 Nov 01 j 13:13	20°♊47'03	
direct	320 Dec 19 j 23:06	18°♊32'28		opposition	327 Jan 07 j 01:07	17°♊20'28	0°24'59
evening set	321 Apr 01 j 12:45	26°♊36'59		min. Earth dist.	327 Jan 06 j 17:49	17°♊21'58	8.14309 AU
conjunction	321 Apr 19 j 06:44	28°♊55'12	-2°-9'-3	direct	327 Mar 15 j 21:01	13°♊50'52	
minimum elong	321 Apr 19 j 06:47	28°♊55'13	2°09'03	evening set	327 Jun 30 j 01:45	22°♊00'26	
max. Earth dist.	321 Apr 19 j 10:03	28°♊56'17	10.03282 AU	conjunction	327 Jul 18 j 03:01	24°♊18'00	0°36'27
	321 Apr 27 j 13:22	0°♊		minimum elong	327 Jul 18 j 02:59	24°♊18'00	0°36'27
morning rise	321 May 07 j 04:38	1°♊14'40		max. Earth dist.	327 Jul 18 j 12:05	24°♊20'54	10.19405 AU
retrograde	321 Aug 22 j 07:18	9°♊39'58		morning rise	327 Aug 05 j 00:56	26°♊34'29	
opposition	321 Oct 28 j 22:10	6°♊09'09	-2°-32'-33		327 Sep 03 j 02:29	0°♊	
min. Earth dist.	321 Oct 28 j 18:42	6°♊09'52	8.00645 AU	retrograde	327 Nov 15 j 02:51	4°♊25'23	
direct	322 Jan 03 j 03:42	2°♊41'29		opposition	328 Jan 20 j 18:51	1°♊00'27	1°04'13
evening set	322 Apr 16 j 11:36	10°♊52'20		min. Earth dist.	328 Jan 20 j 12:12	1°♊01'48	8.24863 AU
conjunction	322 May 04 j 10:03	13°♊12'33	-1°-53'-23		328 Feb 02 j 09:49	30°♊R♊	
minimum elong	322 May 04 j 10:06	13°♊12'34	1°53'23	direct	328 Mar 29 j 06:03	27°♊31'27	
max. Earth dist.	322 May 04 j 15:52	13°♊14'28	9.98445 AU	evening set	328 May 22 j 21:29	0°♊	
	322 May 18 j 02:54	15°♊			328 Jul 13 j 12:48	5°♊34'49	
morning rise	322 May 22 j 11:22	15°♊33'42		conjunction	328 Jul 31 j 09:56	7°♊49'29	1°06'32
retrograde	322 Sep 06 j 01:46	23°♊59'25		minimum elong	328 Jul 31 j 09:53	7°♊49'28	1°06'32
opposition	322 Nov 12 j 06:32	20°♊28'41	-2°-8'-26	max. Earth dist.	328 Jul 31 j 17:42	7°♊51'56	10.30743 AU
min. Earth dist.	322 Nov 12 j 01:19	20°♊29'46	7.97274 AU	morning rise	328 Aug 18 j 03:01	10°♊02'50	
direct	323 Jan 17 j 14:19	17°♊00'02			328 Oct 02 j 02:09	15°♊	
evening set	323 May 01 j 15:41	25°♊15'11		retrograde	328 Nov 27 j 07:58	17°♊43'43	
conjunction	323 May 19 j 17:52	27°♊36'43	-1°-30'-34		329 Jan 24 j 23:07	15°♊R♊	
minimum elong	323 May 19 j 17:56	27°♊36'44	1°30'35	opposition	329 Feb 02 j 06:33	14°♊20'25	1°38'53
max. Earth dist.	323 May 20 j 01:49	27°♊39'20	9.96662 AU	min. Earth dist.	329 Feb 02 j 00:19	14°♊21'40	8.36852 AU
morning rise	323 Jun 06 j 21:37	29°♊58'46		direct	329 Apr 12 j 08:22	10°♊52'17	
	323 Jun 07 j 01:27	0°♊II		evening set	329 Jun 24 j 03:11	15°♊	
retrograde	323 Sep 20 j 18:01	8°♊II21'49			329 Jul 27 j 13:30	18°♊48'12	
opposition	323 Nov 26 j 15:05	4°♊II51'35	-1°-36'-9	conjunction	329 Aug 14 j 05:46	20°♊59'41	1°32'23
min. Earth dist.	323 Nov 26 j 08:20	4°♊II52'59	7.97026 AU	minimum elong	329 Aug 14 j 05:42	20°♊59'40	1°32'23
direct	324 Feb 01 j 04:03	1°♊II22'13		max. Earth dist.	329 Aug 14 j 12:22	21°♊01'44	10.43161 AU
evening set	324 May 15 j 22:13	9°♊II39'22		morning rise	329 Aug 31 j 17:26	23°♊09'42	
conjunction	324 Jun 03 j 02:46	12°♊II01'19	-1°-2'-6		329 Nov 12 j 17:58	0°♊	
minimum elong	324 Jun 03 j 02:49	12°♊II01'20	1°02'06	retrograde	329 Dec 10 j 06:13	0°♊40'53	
max. Earth dist.	324 Jun 03 j 12:19	12°♊II04'27	9.98049 AU		330 Jan 07 j 02:00	30°♊R♊	
morning rise	324 Jun 21 j 07:27	14°♊II23'20		opposition	330 Feb 15 j 11:51	27°♊19'07	2°07'25
retrograde	324 Oct 04 j 06:31	22°♊II40'56		min. Earth dist.	330 Feb 15 j 06:10	27°♊20'14	8.49589 AU
opposition	324 Dec 09 j 22:01	19°♊II11'37	0°-57'-57	direct	330 Apr 26 j 02:50	23°♊52'04	
min. Earth dist.	324 Dec 09 j 14:17	19°♊II13'14	7.99932 AU		330 Jul 27 j 00:44	0°♊	
direct	325 Feb 14 j 18:49	15°♊II41'51		evening set	330 Aug 10 j 03:24	1°♊39'48	
evening set	325 May 31 j 04:00	23°♊II58'37		conjunction	330 Aug 27 j 14:29	3°♊48'03	1°52'57
conjunction	325 Jun 18 j 09:14	26°♊II20'01	0°-29'-57	minimum elong	330 Aug 27 j 14:26	3°♊48'02	1°52'56
minimum elong	325 Jun 18 j 09:16	26°♊II20'01	0°29'58	max. Earth dist.	330 Aug 27 j 20:07	3°♊49'47	10.55972 AU
max. Earth dist.	325 Jun 18 j 19:36	26°♊II23'23	10.02527 AU	morning rise	330 Sep 13 j 20:35	5°♊54'46	
morning rise	325 Jul 06 j 13:14	28°♊II41'00		retrograde	330 Dec 22 j 20:23	13°♊16'56	
	325 Jul 17 j 01:12	0°♊		opposition	331 Feb 28 j 10:49	9°♊56'35	2°28'54
retrograde	325 Oct 18 j 13:31	6°♊51'00		min. Earth dist.	331 Feb 28 j 06:38	9°♊57'24	8.62387 AU
				direct	331 May 09 j 13:29	6°♊30'42	



evening set	331 Aug 23 j 06:14	14° $\mathring{M}$ 10'01		conjunction	337 Nov 17 j 01:25	25° $\mathring{M}$ 43'02	1°35'28
				minimum elong	337 Nov 17 j 01:27	25° $\mathring{M}$ 43'03	1°35'27
conjunction	331 Sep 09 j 12:11	16° $\mathring{M}$ 15'09	2°07'38	max. Earth dist.	337 Nov 16 j 17:14	25° $\mathring{M}$ 40'38	11.10437 AU
minimum elong	331 Sep 09 j 12:09	16° $\mathring{M}$ 15'09	2°07'37	morning rise	337 Dec 03 j 13:49	27° $\mathring{M}$ 38'28	
max. Earth dist.	331 Sep 09 j 16:01	16° $\mathring{M}$ 16'19	10.68510 AU		337 Dec 25 j 00:52	0° $\mathring{A}$	
morning rise	331 Sep 26 j 13:08	18° $\mathring{M}$ 18'50		retrograde	338 Mar 13 j 17:06	4° $\mathring{A}$ 34'29	
retrograde	332 Jan 04 j 03:04	25° $\mathring{M}$ 32'59		opposition	338 May 23 j 05:16	1° $\mathring{A}$ 17'18	1°43'56
opposition	332 Mar 12 j 04:07	22° $\mathring{M}$ 13'54	2°42'53	min. Earth dist.	338 May 23 j 12:29	1° $\mathring{A}$ 15'58	9.10416 AU
min. Earth dist.	332 Mar 12 j 02:09	22° $\mathring{M}$ 14'16	8.74593 AU		338 Jun 10 j 05:32	30° $\mathring{R}$ $\mathring{M}$	
direct	332 May 21 j 17:49	18° $\mathring{M}$ 49'14		direct	338 Aug 02 j 09:56	27° $\mathring{M}$ 58'19	
evening set	332 Sep 03 j 22:18	26° $\mathring{M}$ 20'12			338 Sep 22 j 12:49	0° $\mathring{A}$	
				evening set	338 Nov 11 j 16:49	4° $\mathring{A}$ 57'50	
conjunction	332 Sep 20 j 23:29	28° $\mathring{M}$ 22'35	2°16'11	conjunction	338 Nov 28 j 06:19	6° $\mathring{A}$ 53'41	1°14'03
minimum elong	332 Sep 20 j 23:28	28° $\mathring{M}$ 22'35	2°16'11	minimum elong	338 Nov 28 j 06:21	6° $\mathring{A}$ 53'42	1°14'03
max. Earth dist.	332 Sep 21 j 00:31	28° $\mathring{M}$ 22'54	10.80143 AU	max. Earth dist.	338 Nov 27 j 22:03	6° $\mathring{A}$ 51'15	11.09641 AU
	332 Oct 04 j 12:20	0° $\mathring{A}$		morning rise	338 Dec 14 j 19:19	8° $\mathring{A}$ 49'27	
morning rise	332 Oct 07 j 20:07	0° $\mathring{A}$ 23'37		retrograde	339 Mar 25 j 11:39	15° $\mathring{A}$ 47'48	
retrograde	333 Jan 15 j 03:57	7° $\mathring{A}$ 31'02		opposition	339 Jun 04 j 05:36	12° $\mathring{A}$ 29'55	1°15'55
opposition	333 Mar 24 j 16:04	4° $\mathring{A}$ 12'57	2°49'20	min. Earth dist.	339 Jun 04 j 12:36	12° $\mathring{A}$ 28'37	9.08385 AU
min. Earth dist.	333 Mar 24 j 16:24	4° $\mathring{A}$ 12'53	8.85591 AU	direct	339 Aug 14 j 04:57	9° $\mathring{A}$ 11'15	
direct	333 Jun 03 j 14:01	0° $\mathring{A}$ 49'31		evening set	339 Nov 22 j 21:55	16° $\mathring{A}$ 09'56	
evening set	333 Sep 16 j 04:49	8° $\mathring{A}$ 12'45					
conjunction	333 Oct 03 j 02:01	10° $\mathring{A}$ 12'49	2°18'42	conjunction	339 Dec 09 j 11:51	18° $\mathring{A}$ 06'17	0°49'45
minimum elong	333 Oct 03 j 02:01	10° $\mathring{A}$ 12'49	2°18'42	minimum elong	339 Dec 09 j 11:52	18° $\mathring{A}$ 06'17	0°49'45
max. Earth dist.	333 Oct 03 j 00:03	10° $\mathring{A}$ 12'14	10.90315 AU	max. Earth dist.	339 Dec 09 j 03:39	18° $\mathring{A}$ 03'52	11.06472 AU
morning rise	333 Oct 19 j 19:15	12° $\mathring{A}$ 11'43		morning rise	339 Dec 26 j 01:59	20° $\mathring{A}$ 02'47	
retrograde	334 Jan 26 j 23:20	19° $\mathring{A}$ 13'51		retrograde	340 Apr 05 j 11:09	27° $\mathring{A}$ 05'01	
opposition	334 Apr 05 j 23:24	15° $\mathring{A}$ 56'31	2°48'34	opposition	340 Jun 15 j 07:33	23° $\mathring{A}$ 46'15	0°44'48
min. Earth dist.	334 Apr 06 j 01:12	15° $\mathring{A}$ 56'11	8.94886 AU	min. Earth dist.	340 Jun 15 j 14:51	23° $\mathring{A}$ 44'54	9.04036 AU
direct	334 Jun 16 j 04:03	12° $\mathring{A}$ 34'18		direct	340 Aug 24 j 22:35	20° $\mathring{A}$ 27'41	
evening set	334 Sep 28 j 03:05	19° $\mathring{A}$ 50'38		evening set	340 Dec 03 j 04:52	27° $\mathring{A}$ 27'04	
conjunction	334 Oct 14 j 21:15	21° $\mathring{A}$ 48'53	2°15'25	conjunction	340 Dec 19 j 19:31	29° $\mathring{A}$ 24'18	0°23'20
minimum elong	334 Oct 14 j 21:16	21° $\mathring{A}$ 48'54	2°15'25	minimum elong	340 Dec 19 j 19:32	29° $\mathring{A}$ 24'18	0°23'20
max. Earth dist.	334 Oct 14 j 17:48	21° $\mathring{A}$ 47'52	10.98631 AU	max. Earth dist.	340 Dec 19 j 10:23	29° $\mathring{A}$ 21'36	11.01046 AU
morning rise	334 Oct 31 j 11:53	23° $\mathring{A}$ 46'09			340 Dec 24 j 20:04	0° $\mathring{B}$	
	335 Jan 08 j 23:10	0° $\mathring{M}$		morning rise	341 Jan 05 j 11:25	1° $\mathring{B}$ 21'58	
retrograde	335 Feb 07 j 18:28	0° $\mathring{M}$ 44'33		retrograde	341 Apr 17 j 13:00	8° $\mathring{B}$ 29'38	
	335 Mar 10 j 02:00	30° $\mathring{R}$ $\mathring{A}$		opposition	341 Jun 27 j 12:15	5° $\mathring{B}$ 09'48	0°11'34
opposition	335 Apr 18 j 03:32	27° $\mathring{A}$ 27'42	2°41'00	min. Earth dist.	341 Jun 27 j 20:08	5° $\mathring{B}$ 08'20	8.97516 AU
min. Earth dist.	335 Apr 18 j 06:30	27° $\mathring{A}$ 27'09	9.02175 AU	direct	341 Sep 05 j 16:12	1° $\mathring{B}$ 51'06	
direct	335 Jun 28 j 12:42	24° $\mathring{A}$ 06'35		desc. node	341 Nov 02 j 13:21	4° $\mathring{B}$ 29'56	
	335 Sep 28 j 10:21	0° $\mathring{M}$		evening set	341 Dec 14 j 15:25	8° $\mathring{B}$ 52'50	
evening set	335 Oct 09 j 18:30	1° $\mathring{M}$ 16'55					
conjunction	335 Oct 26 j 10:28	3° $\mathring{M}$ 13'53	2°06'45	conjunction	341 Dec 31 j 07:11	10° $\mathring{B}$ 51'19	0°-4'-25
minimum elong	335 Oct 26 j 10:30	3° $\mathring{M}$ 13'53	2°06'46	minimum elong	341 Dec 31 j 07:10	10° $\mathring{B}$ 51'19	0°04'26
max. Earth dist.	335 Oct 26 j 05:58	3° $\mathring{M}$ 12'34	11.04854 AU	behind sun begin	341 Dec 31 j 00:19	10° $\mathring{B}$ 49'17	
morning rise	335 Nov 11 j 23:22	5° $\mathring{M}$ 10'01		behind sun end	341 Dec 31 j 14:02	10° $\mathring{B}$ 53'20	
retrograde	336 Feb 19 j 10:25	12° $\mathring{M}$ 06'08		max. Earth dist.	341 Dec 30 j 21:42	10° $\mathring{B}$ 48'30	10.93540 AU
opposition	336 Apr 29 j 05:21	8° $\mathring{M}$ 49'28	2°27'15	morning rise	342 Jan 17 j 01:09	12° $\mathring{B}$ 50'28	
min. Earth dist.	336 Apr 29 j 09:58	8° $\mathring{M}$ 48'37	9.07271 AU	retrograde	342 Apr 29 j 21:41	20° $\mathring{B}$ 05'08	
direct	336 Jul 09 j 14:08	5° $\mathring{M}$ 29'17		opposition	342 Jul 09 j 20:41	16° $\mathring{B}$ 44'03	0°-22'-41
evening set	336 Oct 20 j 04:56	12° $\mathring{M}$ 34'44		min. Earth dist.	342 Jul 10 j 04:27	16° $\mathring{B}$ 42'36	8.89048 AU
				direct	342 Sep 17 j 14:38	13° $\mathring{B}$ 25'02	
conjunction	336 Nov 05 j 19:20	14° $\mathring{M}$ 30'52	1°53'15	evening set	342 Dec 26 j 07:16	20° $\mathring{B}$ 30'40	
minimum elong	336 Nov 05 j 19:22	14° $\mathring{M}$ 30'52	1°53'15	conjunction	343 Jan 12 j 00:40	22° $\mathring{B}$ 30'44	0°-32'-18
max. Earth dist.	336 Nov 05 j 12:51	14° $\mathring{M}$ 28'57	11.08825 AU	minimum elong	343 Jan 12 j 00:39	22° $\mathring{B}$ 30'44	0°32'19
	336 Nov 09 j 22:35	15° $\mathring{M}$		max. Earth dist.	343 Jan 11 j 16:27	22° $\mathring{B}$ 28'16	10.84214 AU
morning rise	336 Nov 22 j 07:35	16° $\mathring{M}$ 26'25		morning rise	343 Jan 28 j 20:51	24° $\mathring{B}$ 31'42	
retrograde	337 Mar 02 j 01:06	23° $\mathring{M}$ 21'42			343 Mar 24 j 09:13	0° $\mathring{\approx}$	
opposition	337 May 11 j 05:32	20° $\mathring{M}$ 04'56	2°07'59	retrograde	343 May 12 j 14:32	1° $\mathring{\approx}$ 54'44	
min. Earth dist.	337 May 11 j 12:01	20° $\mathring{M}$ 03'44	9.10045 AU		343 Jul 02 j 08:31	30° $\mathring{R}$ $\mathring{B}$	
direct	337 Jul 21 j 13:11	16° $\mathring{M}$ 45'26		opposition	343 Jul 22 j 09:49	28° $\mathring{B}$ 32'16	0°-56'-44
evening set	337 Oct 31 j 11:50	23° $\mathring{M}$ 47'16		min. Earth dist.	343 Jul 22 j 16:14	28° $\mathring{B}$ 31'03	8.78940 AU
				direct	343 Sep 29 j 15:09	25° $\mathring{B}$ 12'46	



	343 Dec 17 j 06:41	0°♊		conjunction	350 Apr 13 j 07:05	23°♊08'10	-2°-13'-11
evening set	344 Jan 07 j 06:06	2°♊23'48		minimum elong	350 Apr 13 j 07:07	23°♊08'10	2°13'11
				max. Earth dist.	350 Apr 13 j 11:51	23°♊09'43	10.07145 AU
conjunction	344 Jan 24 j 01:27	4°♊25'47	0°-59'-23	morning rise	350 May 01 j 03:04	25°♊26'38	
minimum elong	344 Jan 24 j 01:25	4°♊25'46	0°59'25		350 Jun 09 j 01:01	0°♋	
max. Earth dist.	344 Jan 23 j 18:28	4°♊23'39	10.73410 AU	retrograde	350 Aug 16 j 10:39	3°♋50'45	
morning rise	344 Feb 10 j 00:10	6°♊28'52		opposition	350 Oct 23 j 05:22	0°♋20'36	-2°-39'-42
retrograde	344 May 24 j 14:49	14°♋01'22		min. Earth dist.	350 Oct 23 j 00:47	0°♋21'32	8.04136 AU
opposition	344 Aug 03 j 04:29	10°♋37'28	-1°-29'-10		350 Oct 27 j 09:45	30°♌♊	
min. Earth dist.	344 Aug 03 j 09:32	10°♋36'30	8.67575 AU	direct	350 Dec 28 j 09:53	26°♊54'04	
direct	344 Oct 10 j 20:07	7°♋17'16			351 Feb 25 j 18:57	0°♋	
evening set	345 Jan 18 j 13:38	14°♋35'09		evening set	351 Apr 10 j 11:16	5°♋02'09	
	345 Jan 21 j 23:38	15°♋					
				conjunction	351 Apr 28 j 07:47	7°♋21'26	-2°00'-50
conjunction	345 Feb 04 j 11:08	16°♋39'19	-1°-24'-25	minimum elong	351 Apr 28 j 07:50	7°♋21'27	2°00'50
minimum elong	345 Feb 04 j 11:06	16°♋39'18	1°24'27	max. Earth dist.	351 Apr 28 j 13:57	7°♋23'28	10.01471 AU
max. Earth dist.	345 Feb 04 j 04:48	16°♋37'22	10.61564 AU	morning rise	351 May 16 j 07:32	9°♋41'48	
morning rise	345 Feb 21 j 12:43	18°♋44'46			351 Jul 01 j 12:55	15°♋	
retrograde	345 Jun 07 j 00:05	26°♋27'29		retrograde	351 Aug 31 j 05:54	18°♋07'25	
opposition	345 Aug 16 j 05:13	23°♋02'09	-1°-58'-25		351 Nov 01 j 22:53	15°♌♋	
min. Earth dist.	345 Aug 16 j 09:17	23°♋01'22	8.55435 AU	opposition	351 Nov 06 j 13:13	14°♋37'12	-2°-19'-34
direct	345 Oct 23 j 06:59	19°♋41'06		min. Earth dist.	351 Nov 06 j 07:56	14°♋38'18	7.99786 AU
evening set	346 Jan 31 j 06:50	27°♋07'00		direct	352 Jan 11 j 18:04	11°♋09'36	
					352 Mar 18 j 13:54	15°♋	
conjunction	346 Feb 17 j 06:57	29°♋13'34	-1°-46'-5	evening set	352 Apr 24 j 13:37	19°♋22'44	
minimum elong	346 Feb 17 j 06:54	29°♋13'33	1°46'06				
max. Earth dist.	346 Feb 17 j 01:33	29°♋11'53	10.49213 AU	conjunction	352 May 12 j 14:05	21°♋43'36	-1°-40'-55
	346 Feb 23 j 11:44	0°♌		minimum elong	352 May 12 j 14:09	21°♋43'38	1°40'56
morning rise	346 Mar 06 j 11:46	1°♌21'36		max. Earth dist.	352 May 12 j 21:01	21°♋45'53	9.98545 AU
retrograde	346 Jun 20 j 17:13	9°♌14'50		morning rise	352 May 30 j 16:49	24°♋05'12	
opposition	346 Aug 29 j 12:41	5°♌48'07	-2°-22'-45		352 Jul 22 j 12:37	0°♍	
min. Earth dist.	346 Aug 29 j 15:48	5°♌47'31	8.43092 AU	retrograde	352 Sep 13 j 23:23	2°♍29'18	
direct	346 Nov 05 j 01:02	2°♌26'04			352 Nov 07 j 13:49	30°♌♋	
evening set	347 Feb 13 j 10:33	10°♌00'50		opposition	352 Nov 19 j 21:59	28°♋59'27	-1°-50'-33
				min. Earth dist.	352 Nov 19 j 16:24	29°♋00'37	7.98240 AU
conjunction	347 Mar 02 j 13:57	12°♌10'00	-2°-2'-59	direct	353 Jan 25 j 07:09	25°♋31'00	
minimum elong	347 Mar 02 j 13:55	12°♌10'00	2°02'59		353 Apr 08 j 08:25	0°♍	
max. Earth dist.	347 Mar 02 j 10:48	12°♌09'00	10.36955 AU	evening set	353 May 09 j 19:16	3°♍47'08	
morning rise	347 Mar 19 j 22:16	14°♌20'44					
retrograde	347 Jul 04 j 17:42	22°♌24'08		conjunction	353 May 27 j 22:42	6°♍08'50	-1°-14'-39
opposition	347 Sep 12 j 02:37	18°♌56'11	-2°-40'-27	minimum elong	353 May 27 j 22:45	6°♍08'51	1°14'39
min. Earth dist.	347 Sep 12 j 04:05	18°♌55'53	8.31164 AU	max. Earth dist.	353 May 28 j 06:12	6°♍11'17	9.98493 AU
direct	347 Nov 18 j 04:14	15°♌33'03		morning rise	353 Jun 15 j 03:11	8°♍30'49	
evening set	348 Feb 27 j 01:30	23°♌17'02		retrograde	353 Sep 28 j 13:02	16°♍50'45	
				opposition	353 Dec 04 j 05:55	13°♍21'38	-1°-14'-35
conjunction	348 Mar 15 j 08:45	25°♌28'57	-2°-13'-48	min. Earth dist.	353 Dec 03 j 23:55	13°♍22'53	7.99614 AU
minimum elong	348 Mar 15 j 08:43	25°♌28'56	2°13'48	direct	354 Feb 08 j 22:16	9°♍52'35	
max. Earth dist.	348 Mar 15 j 08:21	25°♌28'49	10.25430 AU	evening set	354 May 25 j 01:46	18°♍09'30	
morning rise	348 Apr 01 j 20:46	27°♌42'24					
	348 Apr 20 j 18:32	0°♎		conjunction	354 Jun 12 j 06:44	20°♍31'08	0°-43'-48
retrograde	348 Jul 18 j 01:23	5°♎54'49		minimum elong	354 Jun 12 j 06:46	20°♍31'09	0°43'49
opposition	348 Sep 24 j 22:30	2°♎25'51	-2°-49'-54	max. Earth dist.	354 Jun 12 j 14:48	20°♍33'46	10.01398 AU
min. Earth dist.	348 Sep 24 j 21:50	2°♎25'59	8.20290 AU	morning rise	354 Jun 30 j 11:22	22°♍52'35	
	348 Oct 28 j 14:20	30°♏♌			354 Sep 08 j 07:28	0°♏	
direct	348 Nov 30 j 15:05	29°♌01'35		retrograde	354 Oct 12 j 22:10	1°♏05'55	
	349 Jan 02 j 02:33	0°♎			354 Nov 16 j 19:45	30°♏♍	
evening set	349 Mar 12 j 03:22	6°♎54'37		opposition	354 Dec 18 j 11:15	27°♍37'49	0°-34'-14
				min. Earth dist.	354 Dec 18 j 04:37	27°♍39'11	8.03935 AU
conjunction	349 Mar 29 j 14:52	9°♎09'15	-2°-17'-27	direct	355 Feb 23 j 13:48	24°♍08'25	
minimum elong	349 Mar 29 j 14:53	9°♎09'15	2°17'27		355 May 20 j 17:09	0°♏	
max. Earth dist.	349 Mar 29 j 17:18	9°♎10'02	10.15291 AU	evening set	355 Jun 09 j 06:01	2°♏23'50	
morning rise	349 Apr 16 j 06:49	11°♎25'20					
retrograde	349 Aug 01 j 16:14	19°♎44'54		conjunction	355 Jun 27 j 10:47	4°♏44'24	0°-10'-35
opposition	349 Oct 08 j 23:53	16°♎15'10	-2°-49'-52	minimum elong	355 Jun 27 j 10:47	4°♏44'24	0°10'36
min. Earth dist.	349 Oct 08 j 20:57	16°♎15'46	8.11099 AU	behind sun begin	355 Jun 27 j 05:10	4°♏42'36	
direct	349 Dec 14 j 08:33	12°♎49'46		behind sun end	355 Jun 27 j 16:25	4°♏46'13	
evening set	350 Mar 26 j 15:03	20°♎51'01		max. Earth dist.	355 Jun 27 j 19:25	4°♏47'11	10.07164 AU



morning rise	355 Jul 15 j 13:45	7° <del>5</del> 04'22			362 Mar 11 j 20:12	30° <del>R</del> <del>M</del>	
asc. node	355 Oct 24 j 16:14	15° <del>5</del> 08'56		opposition	362 Mar 19 j 18:14	29° <del>M</del> 23'53	2°47'38
retrograde	355 Oct 27 j 00:40	15° <del>5</del> 09'15		min. Earth dist.	362 Mar 19 j 16:33	29° <del>M</del> 24'12	8.80042 AU
opposition	356 Jan 01 j 12:45	11° <del>5</del> 42'22	0°07'35	direct	362 May 29 j 14:06	25° <del>M</del> 59'24	
min. Earth dist.	356 Jan 01 j 05:30	11° <del>5</del> 43'51	8.10989 AU		362 Aug 11 j 01:30	0° <del>Δ</del>	
direct	356 Mar 09 j 03:41	8° <del>5</del> 12'57		evening set	362 Sep 11 j 09:46	3° <del>Δ</del> 25'53	
evening set	356 Jun 23 j 04:51	16° <del>5</del> 24'38					
conjunction	356 Jul 11 j 07:36	18° <del>5</del> 43'15	0°22'51	conjunction	362 Sep 28 j 08:49	5° <del>Δ</del> 26'57	2°18'26
minimum elong	356 Jul 11 j 07:35	18° <del>5</del> 43'15	0°22'51	minimum elong	362 Sep 28 j 08:48	5° <del>Δ</del> 26'57	2°18'26
max. Earth dist.	356 Jul 11 j 16:37	18° <del>5</del> 46'08	10.15450 AU	max. Earth dist.	362 Sep 28 j 09:34	5° <del>Δ</del> 27'11	10.85216 AU
morning rise	356 Jul 29 j 07:15	21° <del>5</del> 00'54		morning rise	362 Oct 15 j 03:21	7° <del>Δ</del> 26'44	
retrograde	356 Nov 08 j 19:02	28° <del>5</del> 56'12		retrograde	363 Jan 22 j 08:09	14° <del>Δ</del> 30'54	
opposition	357 Jan 14 j 09:07	25° <del>5</del> 30'41	0°48'07	opposition	363 Apr 01 j 03:10	11° <del>Δ</del> 12'46	2°49'53
min. Earth dist.	357 Jan 14 j 01:59	25° <del>5</del> 32'08	8.20347 AU	min. Earth dist.	363 Apr 01 j 03:25	11° <del>Δ</del> 12'43	8.90313 AU
direct	357 Mar 23 j 13:58	22° <del>5</del> 01'32		direct	363 Jun 11 j 05:44	7° <del>Δ</del> 49'33	
	357 Jul 06 j 19:16	0° <del>Ω</del>		evening set	363 Sep 23 j 11:03	15° <del>Δ</del> 08'36	
evening set	357 Jul 07 j 19:56	0° <del>Ω</del> 07'39		conjunction	363 Oct 10 j 06:31	17° <del>Δ</del> 07'35	2°17'35
conjunction	357 Jul 25 j 19:08	2° <del>Ω</del> 23'38	0°54'17	minimum elong	363 Oct 10 j 06:31	17° <del>Δ</del> 07'35	2°17'35
minimum elong	357 Jul 25 j 19:06	2° <del>Ω</del> 23'38	0°54'17	max. Earth dist.	363 Oct 10 j 05:07	17° <del>Δ</del> 07'10	10.94687 AU
max. Earth dist.	357 Jul 26 j 03:41	2° <del>Ω</del> 26'21	10.25747 AU	morning rise	363 Oct 26 j 22:07	19° <del>Δ</del> 05'28	
morning rise	357 Aug 12 j 14:17	4° <del>Ω</del> 38'22		retrograde	364 Feb 03 j 02:37	26° <del>Δ</del> 05'01	
retrograde	357 Nov 22 j 04:46	12° <del>Ω</del> 23'36		opposition	364 Apr 12 j 08:14	22° <del>Δ</del> 47'36	2°45'08
opposition	358 Jan 27 j 23:27	8° <del>Ω</del> 59'32	1°24'57	min. Earth dist.	364 Apr 12 j 10:23	22° <del>Δ</del> 47'12	8.98924 AU
min. Earth dist.	358 Jan 27 j 17:16	9° <del>Ω</del> 00'47	8.31436 AU	direct	364 Jun 22 j 15:42	19° <del>Δ</del> 25'37	
direct	358 Apr 06 j 18:11	5° <del>Ω</del> 30'54		evening set	364 Oct 04 j 04:38	26° <del>Δ</del> 38'04	
evening set	358 Jul 22 j 01:22	13° <del>Ω</del> 30'06		conjunction	364 Oct 20 j 21:23	28° <del>Δ</del> 35'28	2°11'10
	358 Aug 03 j 02:46	15° <del>Ω</del>		minimum elong	364 Oct 20 j 21:24	28° <del>Δ</del> 35'28	2°11'11
conjunction	358 Aug 08 j 19:56	15° <del>Ω</del> 43'01	1°22'05	max. Earth dist.	364 Oct 20 j 17:46	28° <del>Δ</del> 34'24	11.02343 AU
minimum elong	358 Aug 08 j 19:53	15° <del>Ω</del> 43'00	1°22'05		364 Nov 01 j 20:56	0° <del>M</del>	
max. Earth dist.	358 Aug 09 j 03:05	15° <del>Ω</del> 45'15	10.37428 AU	morning rise	364 Nov 06 j 11:05	0° <del>M</del> 31'59	
morning rise	358 Aug 26 j 09:52	17° <del>Ω</del> 54'29		retrograde	365 Feb 13 j 17:07	7° <del>M</del> 28'24	
retrograde	358 Dec 05 j 05:58	25° <del>Ω</del> 29'47		opposition	365 Apr 24 j 10:09	4° <del>M</del> 11'25	2°33'57
opposition	359 Feb 10 j 07:31	22° <del>Ω</del> 07'09	1°56'15	min. Earth dist.	365 Apr 24 j 13:26	4° <del>M</del> 10'48	9.05548 AU
min. Earth dist.	359 Feb 10 j 02:52	22° <del>Ω</del> 08'04	8.43595 AU	direct	365 Jul 04 j 19:39	0° <del>M</del> 50'36	
direct	359 Apr 20 j 16:12	18° <del>Ω</del> 39'17		evening set	365 Oct 15 j 16:21	7° <del>M</del> 57'32	
evening set	359 Aug 04 j 20:00	26° <del>Ω</del> 30'37		conjunction	365 Nov 01 j 07:20	9° <del>M</del> 53'51	1°59'41
conjunction	359 Aug 22 j 09:17	28° <del>Ω</del> 40'17	1°44'59	minimum elong	365 Nov 01 j 07:22	9° <del>M</del> 53'51	1°59'41
minimum elong	359 Aug 22 j 09:13	28° <del>Ω</del> 40'16	1°44'59	max. Earth dist.	365 Nov 01 j 02:40	9° <del>M</del> 52'28	11.07897 AU
max. Earth dist.	359 Aug 22 j 14:13	28° <del>Ω</del> 41'49	10.49827 AU	morning rise	365 Nov 17 j 19:51	11° <del>M</del> 49'29	
	359 Sep 02 j 03:12	0° <del>M</del>			365 Dec 17 j 08:54	15° <del>M</del>	
morning rise	359 Sep 08 j 17:48	0° <del>M</del> 48'27		retrograde	366 Feb 25 j 08:29	18° <del>M</del> 44'18	
retrograde	359 Dec 17 j 21:46	8° <del>M</del> 14'23		opposition	366 May 06 j 09:57	15° <del>M</del> 27'30	2°16'58
opposition	360 Feb 23 j 09:06	4° <del>M</del> 53'05	2°20'48	min. Earth dist.	366 May 06 j 13:45	15° <del>M</del> 26'48	9.09943 AU
min. Earth dist.	360 Feb 23 j 05:36	4° <del>M</del> 53'47	8.56157 AU		366 May 12 j 15:48	15° <del>R</del> <del>M</del>	
direct	360 May 03 j 07:36	1° <del>M</del> 26'13		direct	366 Jul 16 j 20:26	12° <del>M</del> 07'43	
evening set	360 Aug 17 j 03:19	9° <del>M</del> 09'12			366 Sep 16 j 13:01	15° <del>M</del>	
conjunction	360 Sep 03 j 11:21	11° <del>M</del> 15'41	2°02'13	evening set	366 Oct 26 j 23:53	19° <del>M</del> 10'20	
minimum elong	360 Sep 03 j 11:19	11° <del>M</del> 15'40	2°02'12	conjunction	366 Nov 12 j 13:50	21° <del>M</del> 06'02	1°43'41
max. Earth dist.	360 Sep 03 j 14:25	11° <del>M</del> 16'37	10.62309 AU	minimum elong	366 Nov 12 j 13:52	21° <del>M</del> 06'03	1°43'41
morning rise	360 Sep 20 j 14:40	13° <del>M</del> 20'43		max. Earth dist.	366 Nov 12 j 08:43	21° <del>M</del> 04'32	11.11150 AU
retrograde	360 Dec 29 j 06:24	20° <del>M</del> 38'13		morning rise	366 Nov 29 j 01:55	23° <del>M</del> 01'17	
opposition	361 Mar 07 j 04:28	17° <del>M</del> 18'07	2°38'00	retrograde	367 Mar 09 j 01:01	29° <del>M</del> 56'01	
min. Earth dist.	361 Mar 07 j 01:45	17° <del>M</del> 18'38	8.68497 AU	opposition	367 May 18 j 09:08	26° <del>M</del> 39'11	1°54'55
direct	361 May 16 j 15:42	13° <del>M</del> 52'23		min. Earth dist.	367 May 18 j 14:06	26° <del>M</del> 38'16	9.11970 AU
evening set	361 Aug 29 j 23:33	21° <del>M</del> 26'57		direct	367 Jul 28 j 15:42	23° <del>M</del> 20'15	
conjunction	361 Sep 16 j 02:49	23° <del>M</del> 30'33	2°13'23		367 Nov 04 j 07:21	0° <del>Δ</del>	
minimum elong	361 Sep 16 j 02:48	23° <del>M</del> 30'32	2°13'22	evening set	367 Nov 07 j 04:52	0° <del>Δ</del> 19'49	
max. Earth dist.	361 Sep 16 j 04:43	23° <del>M</del> 31'07	10.74282 AU	conjunction	367 Nov 23 j 18:17	2° <del>Δ</del> 15'22	1°23'48
morning rise	361 Oct 03 j 01:24	25° <del>M</del> 32'44		minimum elong	367 Nov 23 j 18:19	2° <del>Δ</del> 15'23	1°23'47
	361 Nov 14 j 00:20	0° <del>Δ</del>		max. Earth dist.	367 Nov 23 j 11:39	2° <del>Δ</del> 13'26	11.12001 AU
retrograde	362 Jan 10 j 10:29	2° <del>Δ</del> 42'55		morning rise	367 Dec 10 j 06:48	4° <del>Δ</del> 10'44	
				retrograde	368 Mar 19 j 16:32	11° <del>Δ</del> 06'58	



opposition	368 May 29 j 08:28	7°♄49'48	1°28'34	retrograde	374 Jun 01 j 05:33	21°♄01'11	
min. Earth dist.	368 May 29 j 14:52	7°♄48'37	9.11570 AU	opposition	374 Aug 10 j 15:48	17°♄37'07	-1°-45'-33
direct	368 Aug 08 j 09:23	4°♄31'26		min. Earth dist.	374 Aug 10 j 21:56	17°♄35'57	8.63554 AU
evening set	368 Nov 17 j 09:14	11°♄29'28			374 Sep 18 j 22:35	15°♄	
				direct	374 Oct 18 j 01:20	14°♄16'59	
conjunction	368 Dec 03 j 22:42	13°♄25'17	1°00'42		374 Nov 15 j 14:39	15°♄	
minimum elong	368 Dec 03 j 22:44	13°♄25'17	1°00'42	evening set	375 Jan 25 j 20:21	21°♄37'57	
max. Earth dist.	368 Dec 03 j 14:38	13°♄22'55	11.10427 AU				
morning rise	368 Dec 20 j 12:19	15°♄21'09		conjunction	375 Feb 11 j 19:11	23°♄43'05	-1°-36'-42
retrograde	369 Mar 31 j 12:31	22°♄20'27		minimum elong	375 Feb 11 j 19:08	23°♄43'04	1°36'43
opposition	369 Jun 10 j 08:44	19°♄02'41	0°58'46	max. Earth dist.	375 Feb 11 j 12:52	23°♄41'07	10.57151 AU
min. Earth dist.	369 Jun 10 j 15:52	19°♄01'22	9.08755 AU	morning rise	375 Feb 28 j 22:12	25°♄49'34	
direct	369 Aug 20 j 03:44	15°♄44'40			375 Apr 07 j 10:50	0°♄	
evening set	369 Nov 28 j 14:33	22°♄42'37		retrograde	375 Jun 14 j 18:36	3°♄36'52	
				opposition	375 Aug 23 j 19:20	0°♄11'11	-2°-12'-16
conjunction	369 Dec 15 j 04:42	24°♄39'07	0°35'10	min. Earth dist.	375 Aug 23 j 23:39	0°♄10'20	8.50713 AU
minimum elong	369 Dec 15 j 04:44	24°♄39'07	0°35'11		375 Aug 26 j 04:53	30°♄	
max. Earth dist.	369 Dec 14 j 20:46	24°♄36'47	11.06459 AU	direct	375 Oct 30 j 15:02	26°♄49'56	
morning rise	369 Dec 31 j 19:40	26°♄35'55			375 Dec 31 j 00:11	0°♄	
	370 Feb 01 j 13:32	0°♄		evening set	376 Feb 07 j 18:27	4°♄19'30	
retrograde	370 Apr 12 j 12:21	3°♄39'51					
opposition	370 Jun 22 j 11:20	0°♄21'12	0°26'26	conjunction	376 Feb 24 j 20:14	6°♄27'12	-1°-55'-54
min. Earth dist.	370 Jun 22 j 18:07	0°♄19'57	9.03595 AU	minimum elong	376 Feb 24 j 20:12	6°♄27'11	1°55'55
	370 Jun 27 j 06:41	30°♄		max. Earth dist.	376 Feb 24 j 15:17	6°♄25'39	10.44208 AU
direct	370 Aug 31 j 21:03	27°♄03'19		morning rise	376 Mar 13 j 02:37	8°♄36'23	
	370 Nov 01 j 09:31	0°♄		retrograde	376 Jun 27 j 15:29	16°♄34'12	
evening set	370 Dec 09 j 22:33	4°♄02'42		opposition	376 Sep 05 j 05:30	13°♄06'58	-2°-33'-12
				min. Earth dist.	376 Sep 05 j 08:14	13°♄06'26	8.37914 AU
conjunction	370 Dec 26 j 13:45	6°♄00'14	0°08'03	direct	376 Nov 11 j 12:44	9°♄44'28	
minimum elong	370 Dec 26 j 13:45	6°♄00'14	0°08'03	evening set	377 Feb 20 j 03:29	17°♄23'18	
behind sun begin	370 Dec 26 j 07:30	5°♄58'25					
behind sun end	370 Dec 26 j 19:59	6°♄02'04		conjunction	377 Mar 09 j 08:39	19°♄33'43	-2°-9'-39
max. Earth dist.	370 Dec 26 j 05:58	5°♄57'57	11.00199 AU	minimum elong	377 Mar 09 j 08:37	19°♄33'42	2°09'40
morning rise	371 Jan 12 j 06:26	7°♄58'18		max. Earth dist.	377 Mar 09 j 05:03	19°♄32'34	10.31637 AU
desc. node	371 Apr 14 j 00:41	15°♄02'48		morning rise	377 Mar 26 j 18:44	21°♄45'42	
retrograde	371 Apr 24 j 19:02	15°♄08'26		retrograde	377 Jul 11 j 19:48	29°♄53'19	
opposition	371 Jul 04 j 17:17	11°♄48'40	0°-7'-23	opposition	377 Sep 18 j 22:03	26°♄24'45	-2°-46'-40
min. Earth dist.	371 Jul 04 j 23:57	11°♄47'26	8.96231 AU	min. Earth dist.	377 Sep 18 j 23:31	26°♄24'27	8.25827 AU
direct	371 Sep 12 j 16:41	8°♄30'36		direct	377 Nov 24 j 18:34	23°♄00'53	
evening set	371 Dec 21 j 11:15	15°♄33'02			378 Feb 27 j 09:49	0°♄	
				evening set	378 Mar 05 j 23:28	0°♄49'06	
conjunction	372 Jan 07 j 03:41	17°♄31'58	0°-19'-52				
minimum elong	372 Jan 07 j 03:40	17°♄31'58	0°19'53	conjunction	378 Mar 23 j 08:40	3°♄02'19	-2°-16'-45
max. Earth dist.	372 Jan 06 j 19:01	17°♄29'23	10.91817 AU	minimum elong	378 Mar 23 j 08:39	3°♄02'19	2°16'46
morning rise	372 Jan 23 j 22:36	19°♄31'42		max. Earth dist.	378 Mar 23 j 07:03	3°♄01'48	10.20126 AU
retrograde	372 May 06 j 07:05	26°♄49'24		morning rise	378 Apr 09 j 22:46	5°♄17'05	
opposition	372 Jul 16 j 03:19	23°♄28'21	0°-41'-33	retrograde	378 Jul 26 j 06:54	13°♄33'04	
min. Earth dist.	372 Jul 16 j 10:36	23°♄26'59	8.86863 AU	opposition	378 Oct 02 j 20:30	10°♄03'24	-2°-51'-12
direct	372 Sep 23 j 13:36	20°♄09'49		min. Earth dist.	378 Oct 02 j 20:31	10°♄03'24	8.15122 AU
evening set	373 Jan 01 j 06:05	27°♄16'58		direct	378 Dec 08 j 08:41	6°♄38'10	
				evening set	379 Mar 20 j 05:58	14°♄35'21	
conjunction	373 Jan 18 j 00:10	29°♄17'39	0°-47'-22				
minimum elong	373 Jan 18 j 00:09	29°♄17'38	0°47'24	conjunction	379 Apr 06 j 19:44	16°♄51'17	-2°-16'-15
max. Earth dist.	373 Jan 17 j 14:57	29°♄14'52	10.81554 AU	minimum elong	379 Apr 06 j 19:45	16°♄51'18	2°16'15
	373 Jan 23 j 20:21	0°♄		max. Earth dist.	379 Apr 06 j 20:40	16°♄51'36	10.10328 AU
morning rise	373 Feb 03 j 21:38	1°♄19'22		morning rise	379 Apr 24 j 13:58	19°♄08'40	
retrograde	373 May 19 j 01:23	8°♄46'02		retrograde	379 Aug 09 j 22:08	27°♄30'49	
opposition	373 Jul 28 j 18:36	5°♄23'32	-1°-14'-46	opposition	379 Oct 16 j 23:46	24°♄00'24	-2°-45'-50
min. Earth dist.	373 Jul 29 j 01:56	5°♄22'09	8.75805 AU	min. Earth dist.	379 Oct 16 j 22:04	24°♄00'45	8.06414 AU
direct	373 Oct 05 j 16:16	2°♄04'19		direct	379 Dec 22 j 07:28	20°♄33'51	
evening set	374 Jan 13 j 08:34	9°♄17'44		evening set	380 Apr 02 j 21:57	28°♄38'57	
					380 Apr 13 j 08:47	0°♄	
conjunction	374 Jan 30 j 04:49	11°♄20'30	-1°-13'-24				
minimum elong	374 Jan 30 j 04:46	11°♄20'29	1°13'26	conjunction	380 Apr 20 j 16:24	0°♄57'21	-2°-7'-40
max. Earth dist.	374 Jan 29 j 20:42	11°♄18'01	10.69810 AU	minimum elong	380 Apr 20 j 16:27	0°♄57'22	2°07'40
morning rise	374 Feb 16 j 04:55	13°♄24'28		max. Earth dist.	380 Apr 20 j 20:13	0°♄58'36	10.02824 AU
	374 Mar 01 j 19:22	15°♄		morning rise	380 May 08 j 14:32	3°♄16'58	



retrograde	380 Aug 23 j 16:00	11°♄42'29		retrograde	386 Nov 16 j 09:45	6°♄27'23	
opposition	380 Oct 30 j 06:24	8°♄11'43	-2°-30'-19	opposition	387 Jan 22 j 02:56	3°♄02'28	1°08'23
min. Earth dist.	380 Oct 30 j 02:36	8°♄12'30	8.00233 AU	min. Earth dist.	387 Jan 21 j 19:52	3°♄03'54	8.25332 AU
direct	381 Jan 04 j 12:46	4°♄44'01			387 Mar 09 j 03:13	30°♄♄	
evening set	381 Apr 17 j 21:25	12°♄55'22		direct	387 Mar 31 j 15:15	29°♄33'28	
	381 May 03 j 20:15	15°♄			387 Apr 23 j 01:46	0°♄	
				evening set	387 Jul 15 j 22:01	7°♄36'32	
conjunction	381 May 05 j 20:16	15°♄15'46	-1°-51'-11				
minimum elong	381 May 05 j 20:20	15°♄15'47	1°51'11	conjunction	387 Aug 02 j 18:52	9°♄51'02	1°09'41
max. Earth dist.	381 May 06 j 02:40	15°♄17'52	9.98095 AU	minimum elong	387 Aug 02 j 18:49	9°♄51'01	1°09'40
morning rise	381 May 23 j 21:44	17°♄37'01		max. Earth dist.	387 Aug 03 j 02:54	9°♄53'34	10.31259 AU
retrograde	381 Sep 07 j 10:34	26°♄02'49		morning rise	387 Aug 20 j 11:31	12°♄04'11	
opposition	381 Nov 13 j 15:02	22°♄32'07	-2°-5'-15		387 Sep 14 j 09:09	15°♄	
min. Earth dist.	381 Nov 13 j 09:21	22°♄33'18	7.96987 AU	retrograde	387 Nov 29 j 16:08	19°♄44'34	
direct	382 Jan 18 j 22:41	19°♄03'27		opposition	388 Feb 04 j 14:19	16°♄21'17	1°42'27
evening set	382 May 03 j 01:50	27°♄18'58		min. Earth dist.	388 Feb 04 j 07:32	16°♄22'39	8.37409 AU
					388 Feb 22 j 00:56	15°♄♄	
conjunction	382 May 21 j 04:18	29°♄40'38	-1°-27'-41	direct	388 Apr 13 j 16:21	12°♄53'11	
minimum elong	382 May 21 j 04:21	29°♄40'39	1°27'41		388 Jun 03 j 10:20	15°♄	
max. Earth dist.	382 May 21 j 12:36	29°♄43'21	9.96455 AU	evening set	388 Jul 28 j 22:06	20°♄48'43	
	382 May 23 j 15:18	0°♄					
morning rise	382 Jun 08 j 08:08	2°♄02'45		conjunction	388 Aug 15 j 14:01	23°♄00'01	1°35'00
retrograde	382 Sep 22 j 03:51	10°♄25'42		minimum elong	388 Aug 15 j 13:58	22°♄59'59	1°34'59
opposition	382 Nov 27 j 23:45	6°♄55'31	-1°-32'-12	max. Earth dist.	388 Aug 15 j 21:26	23°♄02'19	10.43753 AU
min. Earth dist.	382 Nov 27 j 16:56	6°♄56'56	7.96894 AU	morning rise	388 Sep 02 j 01:07	25°♄09'49	
direct	383 Feb 02 j 11:38	3°♄26'06			388 Oct 16 j 12:50	0°♄	
evening set	383 May 18 j 08:40	11°♄43'31		retrograde	388 Dec 11 j 13:24	2°♄40'32	
					389 Feb 08 j 01:00	30°♄♄	
conjunction	383 Jun 05 j 13:20	14°♄05'32	0°-58'-42	opposition	389 Feb 16 j 19:24	29°♄18'49	2°10'16
minimum elong	383 Jun 05 j 13:23	14°♄05'33	0°58'42	min. Earth dist.	389 Feb 16 j 13:40	29°♄19'56	8.50213 AU
max. Earth dist.	383 Jun 05 j 22:42	14°♄08'36	9.98006 AU	direct	389 Apr 27 j 10:49	25°♄51'48	
morning rise	383 Jun 23 j 18:04	16°♄27'34			389 Jul 10 j 00:19	0°♄	
retrograde	383 Oct 06 j 16:58	24°♄44'53		evening set	389 Aug 11 j 11:21	3°♄39'06	
opposition	383 Dec 12 j 06:42	21°♄15'38	0°-53'-31				
min. Earth dist.	383 Dec 11 j 23:28	21°♄17'08	7.99968 AU	conjunction	389 Aug 28 j 22:01	5°♄47'08	1°54'55
direct	384 Feb 17 j 03:22	17°♄45'47		minimum elong	389 Aug 28 j 21:58	5°♄47'07	1°54'55
evening set	384 Jun 01 j 14:32	26°♄02'42		max. Earth dist.	389 Aug 29 j 04:04	5°♄49'00	10.56623 AU
				morning rise	389 Sep 15 j 03:37	7°♄53'40	
conjunction	384 Jun 19 j 19:41	28°♄24'04	0°-26'-17	retrograde	389 Dec 24 j 02:44	15°♄15'22	
minimum elong	384 Jun 19 j 19:43	28°♄24'05	0°26'17	opposition	390 Mar 01 j 18:06	11°♄55'06	2°30'53
max. Earth dist.	384 Jun 20 j 05:19	28°♄27'12	10.02648 AU	min. Earth dist.	390 Mar 01 j 14:21	11°♄55'50	8.63072 AU
	384 Jul 02 j 03:13	0°♄		direct	390 May 10 j 21:47	8°♄29'16	
morning rise	384 Jul 07 j 23:39	0°♄45'02		evening set	390 Aug 24 j 13:34	16°♄08'06	
retrograde	384 Oct 19 j 22:49	8°♄54'36					
opposition	384 Dec 25 j 10:29	5°♄26'36	0°-11'-58	conjunction	390 Sep 10 j 19:02	18°♄13'02	2°08'54
min. Earth dist.	384 Dec 25 j 03:18	5°♄28'05	8.06019 AU	minimum elong	390 Sep 10 j 19:00	18°♄13'02	2°08'53
direct	385 Mar 02 j 18:52	1°♄56'41		max. Earth dist.	390 Sep 10 j 22:30	18°♄14'06	10.69220 AU
asc. node	385 Apr 12 j 17:13	3°♄25'26		morning rise	390 Sep 27 j 19:41	20°♄16'32	
evening set	385 Jun 16 j 16:14	10°♄10'49		retrograde	391 Jan 05 j 09:22	27°♄30'15	
				opposition	391 Mar 14 j 11:03	24°♄11'13	2°43'59
conjunction	385 Jul 04 j 20:06	12°♄30'35	0°07'24	min. Earth dist.	391 Mar 14 j 09:15	24°♄11'34	8.75342 AU
minimum elong	385 Jul 04 j 20:06	12°♄30'35	0°07'24	direct	391 May 24 j 00:48	20°♄46'39	
behind sun begin	385 Jul 04 j 13:24	12°♄28'27		evening set	391 Sep 06 j 05:00	28°♄17'05	
behind sun end	385 Jul 05 j 02:47	12°♄32'44			391 Sep 20 j 13:46	0°♄	
max. Earth dist.	385 Jul 05 j 05:21	12°♄33'34	10.10078 AU				
morning rise	385 Jul 22 j 21:39	14°♄49'36		conjunction	391 Sep 23 j 05:47	0°♄19'16	2°16'44
retrograde	385 Nov 02 j 20:21	22°♄49'58		minimum elong	391 Sep 23 j 05:46	0°♄19'16	2°16'44
opposition	386 Jan 08 j 09:34	19°♄23'27	0°29'32	max. Earth dist.	391 Sep 23 j 06:35	0°♄19'31	10.80928 AU
min. Earth dist.	386 Jan 08 j 02:26	19°♄24'55	8.14656 AU	morning rise	391 Oct 10 j 02:12	2°♄20'08	
direct	386 Mar 17 j 07:52	15°♄53'50		retrograde	392 Jan 17 j 08:30	9°♄27'06	
evening set	386 Jul 01 j 11:29	24°♄03'13		opposition	392 Mar 25 j 22:40	6°♄09'04	2°49'33
				min. Earth dist.	392 Mar 25 j 22:15	6°♄09'08	8.86420 AU
conjunction	386 Jul 19 j 12:29	26°♄20'38	0°39'58	direct	392 Jun 04 j 22:00	2°♄45'44	
minimum elong	386 Jul 19 j 12:27	26°♄20'37	0°39'58	evening set	392 Sep 17 j 10:44	10°♄08'19	
max. Earth dist.	386 Jul 19 j 21:08	26°♄23'23	10.19815 AU				
morning rise	386 Aug 06 j 10:08	28°♄36'57		conjunction	392 Oct 04 j 07:43	12°♄08'12	2°18'32
	386 Aug 17 j 16:33	0°♄		minimum elong	392 Oct 04 j 07:43	12°♄08'12	2°18'32



max. Earth dist.	392 Oct 04 j 06:37	12°♄07'52	10.91185 AU	max. Earth dist.	398 Dec 10 j 06:09	19°♄53'20	11.06853 AU
morning rise	392 Oct 21 j 00:41	14°♄06'54		morning rise	398 Dec 27 j 05:18	21°♄52'26	
retrograde	393 Jan 28 j 05:36	21°♄08'35		retrograde	399 Apr 07 j 14:17	28°♄54'38	
opposition	393 Apr 07 j 05:38	17°♄51'17	2°47'55	opposition	399 Jun 17 j 12:08	25°♄35'54	0°40'59
min. Earth dist.	393 Apr 07 j 06:37	17°♄51'06	8.95782 AU	min. Earth dist.	399 Jun 17 j 20:06	25°♄34'26	9.04330 AU
direct	393 Jun 17 j 11:39	14°♄29'11		direct	399 Aug 27 j 01:33	22°♄17'25	
evening set	393 Sep 29 j 08:13	21°♄44'46		evening set	399 Dec 05 j 07:54	29°♄16'35	
					399 Dec 11 j 12:47	0°♄	
conjunction	393 Oct 16 j 02:17	23°♄42'52	2°14'35	conjunction	399 Dec 21 j 22:33	1°♄13'48	0°20'09
minimum elong	393 Oct 16 j 02:18	23°♄42'52	2°14'36	minimum elong	399 Dec 21 j 22:34	1°♄13'48	0°20'09
max. Earth dist.	393 Oct 15 j 23:44	23°♄42'06	10.99540 AU	max. Earth dist.	399 Dec 21 j 12:58	1°♄10'58	11.01262 AU
morning rise	393 Nov 01 j 16:41	25°♄39'58		morning rise	400 Jan 07 j 14:40	3°♄11'28	
	393 Dec 13 j 12:40	0°♄		retrograde	400 Apr 18 j 17:07	10°♄19'14	
retrograde	394 Feb 08 j 23:24	2°♄37'51		opposition	400 Jun 28 j 16:44	6°♄59'24	0°07'38
	394 Apr 10 j 14:32	30°♄		min. Earth dist.	400 Jun 29 j 00:53	6°♄57'53	8.97645 AU
opposition	394 Apr 19 j 09:23	29°♄21'04	2°39'35	direct	400 Sep 06 j 21:25	3°♄40'45	
min. Earth dist.	394 Apr 19 j 12:24	29°♄20'30	9.03075 AU	desc. node	400 Sep 21 j 07:48	3°♄51'14	
direct	394 Jun 29 j 17:07	26°♄00'04		evening set	400 Dec 15 j 18:29	10°♄42'21	
	394 Sep 11 j 15:54	0°♄					
evening set	394 Oct 10 j 23:07	3°♄09'42		conjunction	401 Jan 01 j 10:25	12°♄40'51	0°-7'-36
conjunction	394 Oct 27 j 14:53	5°♄06'31	2°05'19	minimum elong	401 Jan 01 j 10:25	12°♄40'51	0°07'37
minimum elong	394 Oct 27 j 14:55	5°♄06'31	2°05'19	behind sun begin	401 Jan 01 j 04:04	12°♄38'59	
max. Earth dist.	394 Oct 27 j 10:09	5°♄05'07	11.05733 AU	behind sun end	401 Jan 01 j 16:46	12°♄42'43	
morning rise	394 Nov 13 j 03:45	7°♄02'33		max. Earth dist.	401 Jan 01 j 01:26	12°♄38'11	10.93586 AU
retrograde	395 Feb 20 j 14:18	13°♄58'13		morning rise	401 Jan 18 j 04:28	14°♄40'02	
opposition	395 May 01 j 10:47	10°♄41'37	2°25'07	retrograde	401 May 01 j 02:16	21°♄54'52	
min. Earth dist.	395 May 01 j 15:56	10°♄40'40	9.08116 AU	opposition	401 Jul 11 j 00:55	18°♄33'45	0°-26'-34
direct	395 Jul 11 j 19:57	7°♄21'33		min. Earth dist.	401 Jul 11 j 08:14	18°♄32'23	8.89009 AU
evening set	395 Oct 22 j 08:59	14°♄26'23		direct	401 Sep 18 j 18:08	15°♄14'46	
	395 Oct 27 j 05:29	15°♄		evening set	401 Dec 27 j 10:30	22°♄20'24	
conjunction	395 Nov 07 j 23:14	16°♄22'23	1°51'16	conjunction	402 Jan 13 j 04:03	24°♄20'30	0°-35'-24
minimum elong	395 Nov 07 j 23:17	16°♄22'24	1°51'16	minimum elong	402 Jan 13 j 04:02	24°♄20'30	0°35'25
max. Earth dist.	395 Nov 07 j 16:15	16°♄20'20	11.09629 AU	max. Earth dist.	402 Jan 12 j 20:08	24°♄18'07	10.84088 AU
morning rise	395 Nov 24 j 11:35	18°♄17'51		morning rise	402 Jan 30 j 00:17	26°♄21'31	
retrograde	396 Mar 03 j 05:19	25°♄12'49			402 Mar 04 j 08:04	0°♄	
opposition	396 May 12 j 10:42	21°♄56'06	2°05'15	retrograde	402 May 13 j 18:54	3°♄44'48	
min. Earth dist.	396 May 12 j 16:57	21°♄54'57	9.10794 AU	opposition	402 Jul 23 j 14:04	0°♄22'17	-1°00'-25
direct	396 Jul 22 j 18:49	18°♄36'45		min. Earth dist.	402 Jul 23 j 20:10	0°♄21'08	8.78736 AU
evening set	396 Nov 01 j 15:18	25°♄38'00			402 Jul 28 j 12:20	30°♄	
conjunction	396 Nov 18 j 04:58	27°♄33'41	1°33'01	direct	402 Sep 30 j 18:39	27°♄02'47	
minimum elong	396 Nov 18 j 05:00	27°♄33'42	1°33'01		402 Nov 30 j 02:12	0°♄	
max. Earth dist.	396 Nov 17 j 21:21	27°♄31'27	11.11129 AU	evening set	403 Jan 08 j 09:35	4°♄13'56	
morning rise	396 Dec 04 j 17:23	29°♄29'04		conjunction	403 Jan 25 j 04:56	6°♄15'58	-1°-2'-15
	396 Dec 09 j 06:01	0°♄		minimum elong	403 Jan 25 j 04:54	6°♄15'57	1°02'17
retrograde	397 Mar 14 j 21:21	6°♄24'52		max. Earth dist.	403 Jan 24 j 21:17	6°♄13'38	10.73129 AU
opposition	397 May 24 j 10:06	3°♄07'43	1°40'43	morning rise	403 Feb 11 j 03:48	8°♄19'07	
min. Earth dist.	397 May 24 j 16:38	3°♄06'31	9.11032 AU		403 Apr 24 j 05:45	15°♄	
	397 Jul 19 j 08:10	30°♄		retrograde	403 May 26 j 20:27	15°♄51'57	
direct	397 Aug 03 j 14:56	29°♄48'53			403 Jun 28 j 19:17	15°♄	
	397 Aug 18 j 18:02	0°♄		opposition	403 Aug 05 j 08:53	12°♄27'59	-1°-32'-30
evening set	397 Nov 12 j 20:04	6°♄47'56		min. Earth dist.	403 Aug 05 j 14:23	12°♄26'56	8.67225 AU
conjunction	397 Nov 29 j 09:41	8°♄43'44	1°11'16	direct	403 Oct 12 j 23:30	9°♄07'45	
minimum elong	397 Nov 29 j 09:44	8°♄43'45	1°11'15		404 Jan 08 j 14:46	15°♄	
max. Earth dist.	397 Nov 29 j 01:53	8°♄41'27	11.10184 AU	evening set	404 Jan 20 j 17:24	16°♄25'51	
morning rise	397 Dec 15 j 22:42	10°♄39'27		conjunction	404 Feb 06 j 14:57	18°♄30'05	-1°-26'-56
retrograde	398 Mar 26 j 17:00	17°♄37'39		minimum elong	404 Feb 06 j 14:55	18°♄30'04	1°26'57
opposition	398 Jun 05 j 10:10	14°♄19'50	1°12'20	max. Earth dist.	404 Feb 06 j 07:51	18°♄27'53	10.61153 AU
min. Earth dist.	398 Jun 05 j 17:10	14°♄18'33	9.08843 AU	morning rise	404 Feb 23 j 16:48	20°♄35'38	
direct	398 Aug 15 j 08:52	11°♄01'18		retrograde	404 Jun 08 j 04:42	28°♄18'44	
evening set	398 Nov 24 j 01:05	17°♄59'37		opposition	404 Aug 17 j 09:44	24°♄53'20	-2°-1'-14
conjunction	398 Dec 10 j 14:59	19°♄55'56	0°46'42	min. Earth dist.	404 Aug 17 j 14:34	24°♄52'24	8.54965 AU
minimum elong	398 Dec 10 j 15:01	19°♄55'57	0°46'42	direct	404 Oct 24 j 10:23	21°♄32'11	
				evening set	405 Feb 01 j 10:58	28°♄58'27	



	405 Feb 09 j 18:37	0°♄		evening set	411 Apr 26 j 20:57	21°♄20'18	
conjunction	405 Feb 18 j 11:18	1°♄05'07	-1°-48'-6	conjunction	411 May 14 j 21:43	23°♄41'18	-1°-38'-30
minimum elong	405 Feb 18 j 11:15	1°♄05'06	1°48'06	minimum elong	411 May 14 j 21:47	23°♄41'20	1°38'31
max. Earth dist.	405 Feb 18 j 05:53	1°♄03'25	10.48685 AU	max. Earth dist.	411 May 15 j 04:41	23°♄43'35	9.98231 AU
morning rise	405 Mar 07 j 16:18	3°♄13'15		morning rise	411 Jun 02 j 00:44	26°♄03'00	
retrograde	405 Jun 21 j 20:56	11°♄06'55			411 Jul 04 j 22:01	0°♄	
opposition	405 Aug 30 j 17:16	7°♄40'06	-2°-24'-54	retrograde	411 Sep 16 j 05:13	4°♄27'03	
min. Earth dist.	405 Aug 30 j 20:41	7°♄39'26	8.42515 AU	opposition	411 Nov 22 j 04:13	0°♄57'12	-1°-47'-9
direct	405 Nov 06 j 06:23	4°♄17'57		min. Earth dist.	411 Nov 21 j 22:31	0°♄58'23	7.98060 AU
evening set	406 Feb 14 j 15:06	11°♄53'09			411 Dec 03 j 19:22	30°♄	
				direct	412 Jan 27 j 13:40	27°♄28'40	
conjunction	406 Mar 03 j 18:47	14°♄02'28	-2°-4'-23		412 Mar 20 j 22:35	0°♄	
minimum elong	406 Mar 03 j 18:45	14°♄02'27	2°04'23	evening set	412 May 11 j 02:59	5°♄44'59	
max. Earth dist.	406 Mar 03 j 16:10	14°♄01'38	10.36327 AU				
morning rise	406 Mar 21 j 03:11	16°♄13'19		conjunction	412 May 29 j 06:39	8°♄06'45	-1°-11'-41
retrograde	406 Jul 05 j 22:39	24°♄17'12		minimum elong	412 May 29 j 06:42	8°♄06'46	1°11'41
opposition	406 Sep 13 j 07:26	20°♄49'07	-2°-41'-47	max. Earth dist.	412 May 29 j 14:35	8°♄09'21	9.98449 AU
min. Earth dist.	406 Sep 13 j 08:32	20°♄48'54	8.30505 AU	morning rise	412 Jun 16 j 11:12	10°♄28'46	
direct	406 Nov 19 j 09:06	17°♄25'53		retrograde	412 Sep 29 j 19:36	18°♄48'23	
evening set	407 Feb 28 j 06:35	25°♄10'21		opposition	412 Dec 05 j 12:02	15°♄19'17	-1°-10'-37
				min. Earth dist.	412 Dec 05 j 05:34	15°♄20'37	7.99679 AU
conjunction	407 Mar 17 j 14:06	27°♄22'25	-2°-14'-30	direct	413 Feb 10 j 05:14	11°♄50'10	
minimum elong	407 Mar 17 j 14:05	27°♄22'25	2°14'30	evening set	413 May 26 j 09:29	20°♄07'08	
max. Earth dist.	407 Mar 17 j 13:59	27°♄22'23	10.24739 AU				
morning rise	407 Apr 04 j 02:17	29°♄36'02		conjunction	413 Jun 13 j 14:35	22°♄28'44	0°-40'-29
	407 Apr 07 j 07:07	0°♄		minimum elong	413 Jun 13 j 14:37	22°♄28'45	0°40'30
retrograde	407 Jul 20 j 08:43	7°♄48'56		max. Earth dist.	413 Jun 13 j 23:19	22°♄31'35	10.01559 AU
opposition	407 Sep 27 j 03:37	4°♄19'50	-2°-50'-18	morning rise	413 Jul 01 j 19:05	24°♄50'09	
min. Earth dist.	407 Sep 27 j 02:34	4°♄20'03	8.19588 AU		413 Aug 15 j 21:58	0°♄	
direct	407 Dec 02 j 18:20	0°♄55'27		retrograde	413 Oct 14 j 04:34	3°♄03'05	
evening set	408 Mar 13 j 09:04	8°♄49'02			413 Dec 14 j 16:12	30°♄	
				opposition	413 Dec 19 j 17:20	29°♄35'01	0°-29'-59
conjunction	408 Mar 30 j 20:51	11°♄03'50	-2°-17'-21	min. Earth dist.	413 Dec 19 j 10:09	29°♄36'30	8.04166 AU
minimum elong	408 Mar 30 j 20:51	11°♄03'50	2°17'21	direct	414 Feb 24 j 20:46	26°♄05'38	
max. Earth dist.	408 Mar 30 j 22:51	11°♄04'29	10.14585 AU		414 May 04 j 09:20	0°♄	
morning rise	408 Apr 17 j 13:06	13°♄20'07		evening set	414 Jun 10 j 13:32	4°♄20'59	
retrograde	408 Aug 02 j 23:42	21°♄40'05					
opposition	408 Oct 10 j 05:19	18°♄10'16	-2°-49'-16	conjunction	414 Jun 28 j 18:18	6°♄41'29	0°-7'-9
min. Earth dist.	408 Oct 10 j 02:32	18°♄10'50	8.10403 AU	minimum elong	414 Jun 28 j 18:18	6°♄41'30	0°07'09
direct	408 Dec 15 j 13:17	14°♄44'44		behind sun begin	414 Jun 28 j 11:33	6°♄39'20	
evening set	409 Mar 27 j 21:26	22°♄46'36		behind sun end	414 Jun 29 j 01:04	6°♄43'40	
				max. Earth dist.	414 Jun 29 j 03:36	6°♄44'29	10.07457 AU
conjunction	409 Apr 14 j 13:41	25°♄03'55	-2°-12'-16	morning rise	414 Jul 16 j 21:01	9°♄01'22	
minimum elong	409 Apr 14 j 13:43	25°♄03'56	2°12'16	asc. node	414 Sep 16 j 22:21	15°♄33'00	
max. Earth dist.	409 Apr 14 j 17:34	25°♄05'11	10.06479 AU	retrograde	414 Oct 28 j 06:48	17°♄05'51	
morning rise	409 May 02 j 10:02	27°♄22'34		opposition	415 Jan 02 j 18:45	13°♄39'04	0°11'52
	409 May 23 j 18:11	0°♄		min. Earth dist.	415 Jan 02 j 11:29	13°♄40'33	8.11328 AU
retrograde	409 Aug 17 j 17:12	5°♄47'00		direct	415 Mar 11 j 10:15	10°♄09'40	
opposition	409 Oct 24 j 11:08	2°♄16'49	-2°-38'-4	evening set	415 Jun 25 j 12:21	18°♄21'17	
min. Earth dist.	409 Oct 24 j 07:07	2°♄17'38	8.03515 AU				
	409 Nov 23 j 19:26	30°♄		conjunction	415 Jul 13 j 14:54	20°♄39'48	0°26'13
direct	409 Dec 29 j 16:01	28°♄50'10		minimum elong	415 Jul 13 j 14:52	20°♄39'47	0°26'14
	410 Feb 03 j 02:20	0°♄		max. Earth dist.	415 Jul 13 j 23:59	20°♄42'42	10.15829 AU
evening set	410 Apr 11 j 18:10	6°♄58'50		morning rise	415 Jul 31 j 14:13	22°♄57'18	
					415 Oct 11 j 05:46	0°♄	
conjunction	410 Apr 29 j 14:55	9°♄18'18	-1°-59'-7	retrograde	415 Nov 11 j 01:17	0°♄52'14	
minimum elong	410 Apr 29 j 14:58	9°♄18'19	1°59'08		415 Dec 12 j 02:40	30°♄	
max. Earth dist.	410 Apr 29 j 20:28	9°♄20'07	10.00929 AU	opposition	416 Jan 16 j 15:03	27°♄26'51	0°52'11
morning rise	410 May 17 j 15:02	11°♄38'49		min. Earth dist.	416 Jan 16 j 08:29	27°♄28'11	8.20760 AU
	410 Jun 14 j 04:10	15°♄		direct	416 Mar 24 j 19:38	23°♄57'45	
retrograde	410 Sep 01 j 11:48	20°♄04'38			416 Jun 22 j 01:13	0°♄	
opposition	410 Nov 07 j 19:20	16°♄34'25	-2°-16'-58	evening set	416 Jul 09 j 03:14	2°♄03'47	
min. Earth dist.	410 Nov 07 j 14:27	16°♄35'26	7.99341 AU				
	410 Nov 27 j 13:21	15°♄		conjunction	416 Jul 27 j 02:03	4°♄19'38	0°57'24
direct	411 Jan 13 j 00:46	13°♄06'44		minimum elong	416 Jul 27 j 02:00	4°♄19'37	0°57'24
	411 Feb 27 j 15:26	15°♄		max. Earth dist.	416 Jul 27 j 10:00	4°♄22'10	10.26183 AU



morning rise	416 Aug 13 j 20:50	6°♏34'12		opposition	423 Apr 14 j 13:32	24°♎40'11	2°44'06
retrograde	416 Nov 23 j 11:16	14°♏19'07		min. Earth dist.	423 Apr 14 j 15:21	24°♎39'50	8.99345 AU
opposition	417 Jan 29 j 05:27	10°♏55'12	1°28'34	direct	423 Jun 24 j 20:59	21°♎18'18	
min. Earth dist.	417 Jan 28 j 23:52	10°♏56'19	8.31902 AU	evening set	423 Oct 06 j 08:55	28°♎30'20	
direct	417 Apr 08 j 00:20	7°♏26'39			423 Oct 19 j 03:48	0°♎	
	417 Jul 19 j 20:02	15°♏					
evening set	417 Jul 23 j 08:13	15°♏25'42		conjunction	423 Oct 23 j 01:34	0°♎27'39	2°10'01
				minimum elong	423 Oct 23 j 01:35	0°♎27'40	2°10'01
conjunction	417 Aug 10 j 02:19	17°♏38'28	1°24'46	max. Earth dist.	423 Oct 22 j 22:26	0°♎26'44	11.02743 AU
minimum elong	417 Aug 10 j 02:15	17°♏38'27	1°24'46	morning rise	423 Nov 08 j 15:09	2°♎24'07	
max. Earth dist.	417 Aug 10 j 08:37	17°♏40'27	10.37907 AU	retrograde	424 Feb 15 j 22:05	9°♎20'23	
morning rise	417 Aug 27 j 15:57	19°♏49'48		opposition	424 Apr 25 j 15:17	6°♎03'23	2°32'11
retrograde	417 Dec 06 j 10:30	27°♏24'49		min. Earth dist.	424 Apr 25 j 17:46	6°♎02'55	9.05916 AU
opposition	418 Feb 11 j 13:24	24°♏02'19	1°59'14	direct	424 Jul 06 j 02:12	2°♎42'38	
min. Earth dist.	418 Feb 11 j 08:46	24°♏03'14	8.44097 AU	evening set	424 Oct 16 j 20:11	9°♎49'08	
direct	418 Apr 21 j 23:40	20°♏34'35					
evening set	418 Aug 06 j 02:27	28°♏25'44		conjunction	424 Nov 02 j 11:10	11°♎45'24	1°57'58
	418 Aug 18 j 21:35	0°♎		minimum elong	424 Nov 02 j 11:12	11°♎45'24	1°57'58
				max. Earth dist.	424 Nov 02 j 07:25	11°♎44'18	11.08243 AU
conjunction	418 Aug 23 j 15:21	0°♎35'14	1°47'08	morning rise	424 Nov 18 j 23:35	13°♎40'59	
minimum elong	418 Aug 23 j 15:18	0°♎35'13	1°47'07		424 Nov 30 j 16:17	15°♎	
max. Earth dist.	418 Aug 23 j 19:55	0°♎36'39	10.50335 AU	retrograde	425 Feb 26 j 13:41	20°♎35'38	
morning rise	418 Sep 09 j 23:33	2°♎43'16		opposition	425 May 07 j 14:53	17°♎18'49	2°14'33
retrograde	418 Dec 19 j 02:36	10°♎08'59		min. Earth dist.	425 May 07 j 18:34	17°♎18'09	9.10258 AU
opposition	419 Feb 24 j 14:48	6°♎47'48	2°23'03		425 Jun 11 j 10:04	15°♎	
min. Earth dist.	419 Feb 24 j 10:44	6°♎48'36	8.56671 AU	direct	425 Jul 18 j 00:25	13°♎59'05	
direct	419 May 05 j 14:50	3°♎21'05			425 Aug 22 j 22:06	15°♎	
evening set	419 Aug 19 j 09:23	11°♎03'50		evening set	425 Oct 28 j 03:24	21°♎01'16	
conjunction	419 Sep 05 j 17:08	13°♎10'11	2°03'43	conjunction	425 Nov 13 j 17:18	22°♎56'56	1°41'29
minimum elong	419 Sep 05 j 17:06	13°♎10'10	2°03'43	minimum elong	425 Nov 13 j 17:20	22°♎56'57	1°41'28
max. Earth dist.	419 Sep 05 j 20:44	13°♎11'17	10.62823 AU	max. Earth dist.	425 Nov 13 j 12:00	22°♎55'23	11.11440 AU
morning rise	419 Sep 22 j 20:02	15°♎15'03		morning rise	425 Nov 30 j 05:28	24°♎52'11	
retrograde	419 Dec 31 j 12:59	22°♎32'21			426 Jan 21 j 19:35	0°♎	
opposition	420 Mar 08 j 10:12	19°♎12'22	2°39'26	retrograde	426 Mar 10 j 03:39	1°♎46'46	
min. Earth dist.	420 Mar 08 j 07:05	19°♎12'58	8.69002 AU		426 Apr 28 j 07:21	30°♎	
direct	420 May 17 j 20:42	15°♎46'48		opposition	426 May 19 j 13:50	28°♎29'53	1°51'58
evening set	420 Aug 31 j 05:08	23°♎21'03		min. Earth dist.	426 May 19 j 19:17	28°♎28'53	9.12228 AU
				direct	426 Jul 29 j 19:32	25°♎10'57	
conjunction	420 Sep 17 j 08:08	25°♎24'31	2°14'12		426 Oct 19 j 15:11	0°♎	
minimum elong	420 Sep 17 j 08:06	25°♎24'31	2°14'12	evening set	426 Nov 08 j 08:06	2°♎10'10	
max. Earth dist.	420 Sep 17 j 10:43	25°♎25'18	10.74781 AU				
morning rise	420 Oct 04 j 06:18	27°♎26'35		conjunction	426 Nov 24 j 21:28	4°♎05'41	1°21'12
	420 Oct 26 j 20:20	0°♎		minimum elong	426 Nov 24 j 21:30	4°♎05'42	1°21'11
retrograde	421 Jan 11 j 15:20	4°♎36'35		max. Earth dist.	426 Nov 24 j 14:27	4°♎03'38	11.12234 AU
opposition	421 Mar 20 j 23:57	1°♎17'39	2°48'13	morning rise	426 Dec 11 j 10:10	6°♎01'02	
min. Earth dist.	421 Mar 20 j 22:35	1°♎17'55	8.80531 AU	retrograde	427 Mar 21 j 20:36	12°♎57'10	
	421 Apr 07 j 09:46	30°♎		opposition	427 May 31 j 12:56	9°♎39'57	1°25'11
direct	421 May 30 j 19:37	27°♎53'17		min. Earth dist.	427 May 31 j 19:16	9°♎38'47	9.11769 AU
	421 Jul 21 j 21:15	0°♎		direct	427 Aug 10 j 14:44	6°♎21'36	
evening set	421 Sep 12 j 14:57	5°♎19'26		evening set	427 Nov 19 j 12:08	13°♎19'17	
conjunction	421 Sep 29 j 13:41	7°♎20'23	2°18'35	conjunction	427 Dec 06 j 01:44	15°♎15'05	0°57'48
minimum elong	421 Sep 29 j 13:40	7°♎20'23	2°18'34	minimum elong	427 Dec 06 j 01:46	15°♎15'06	0°57'48
max. Earth dist.	421 Sep 29 j 14:14	7°♎20'33	10.85693 AU	max. Earth dist.	427 Dec 05 j 18:23	15°♎12'56	11.10599 AU
morning rise	421 Oct 16 j 08:02	9°♎20'04		morning rise	427 Dec 22 j 15:24	17°♎10'57	
retrograde	422 Jan 23 j 13:01	16°♎24'02		retrograde	428 Apr 01 j 15:57	24°♎10'14	
opposition	422 Apr 02 j 08:41	13°♎05'59	2°49'38	opposition	428 Jun 11 j 13:03	20°♎52'22	0°55'05
min. Earth dist.	422 Apr 02 j 09:25	13°♎05'51	8.90777 AU	min. Earth dist.	428 Jun 11 j 19:18	20°♎51'13	9.08895 AU
direct	422 Jun 12 j 11:45	9°♎42'51		direct	428 Aug 21 j 07:33	17°♎34'23	
evening set	422 Sep 24 j 15:49	17°♎01'32		evening set	428 Nov 29 j 17:18	24°♎32'02	
conjunction	422 Oct 11 j 11:00	19°♎00'25	2°17'03	conjunction	428 Dec 16 j 07:36	26°♎28'31	0°32'05
minimum elong	422 Oct 11 j 11:00	19°♎00'25	2°17'03	minimum elong	428 Dec 16 j 07:37	26°♎28'32	0°32'05
max. Earth dist.	422 Oct 11 j 09:01	18°♎59'50	10.95132 AU	max. Earth dist.	428 Dec 16 j 00:27	26°♎26'25	11.06573 AU
morning rise	422 Oct 28 j 02:33	20°♎58'14		morning rise	429 Jan 01 j 22:38	28°♎25'19	
retrograde	423 Feb 04 j 06:12	27°♎57'36			429 Jan 15 j 23:27	0°♎	



retrograde	429 Apr 13 j 17:04	5°♄29'16		minimum elong	435 Feb 25 j 23:37	8°♄16'08	1°57'32
opposition	429 Jun 23 j 15:30	2°♄10'33	0°22'35	max. Earth dist.	435 Feb 25 j 17:48	8°♄14'18	10.44247 AU
min. Earth dist.	429 Jun 23 j 21:49	2°♄09'23	9.03684 AU	morning rise	435 Mar 15 j 06:16	10°♄25'22	
	429 Jul 25 j 21:26	30°♄♂		retrograde	435 Jun 29 j 19:45	18°♄23'17	
direct	429 Sep 02 j 01:10	28°♄♂52'40		opposition	435 Sep 07 j 09:09	14°♄56'07	-2°-34'-49
	429 Oct 09 j 04:40	0°♄		min. Earth dist.	435 Sep 07 j 12:33	14°♄55'26	8.37930 AU
evening set	429 Dec 11 j 01:23	5°♄51'50		direct	435 Nov 13 j 15:38	11°♄33'38	
				evening set	436 Feb 22 j 07:11	19°♄12'36	
conjunction	429 Dec 27 j 16:34	7°♄49'22	0°04'54				
minimum elong	429 Dec 27 j 16:34	7°♄49'22	0°04'54	conjunction	436 Mar 10 j 12:31	21°♄23'03	-2°-10'-38
behind sun begin	429 Dec 27 j 09:46	7°♄47'23		minimum elong	436 Mar 10 j 12:30	21°♄23'03	2°10'38
behind sun end	429 Dec 27 j 23:23	7°♄51'22		max. Earth dist.	436 Mar 10 j 08:23	21°♄21'45	10.31632 AU
max. Earth dist.	429 Dec 27 j 08:32	7°♄47'01	11.00273 AU	morning rise	436 Mar 27 j 22:52	23°♄35'06	
morning rise	430 Jan 13 j 09:26	9°♄47'28			436 May 28 j 17:38	0°♄	
desc. node	430 Mar 03 j 05:34	14°♄43'31		retrograde	436 Jul 13 j 00:05	1°♄42'48	
retrograde	430 Apr 25 j 22:48	16°♄57'36			436 Aug 27 j 22:28	30°♄♂	
opposition	430 Jul 05 j 21:21	13°♄37'48	0°-11'-15	opposition	436 Sep 20 j 01:38	28°♄14'18	-2°-47'-25
min. Earth dist.	430 Jul 06 j 04:17	13°♄36'31	8.96299 AU	min. Earth dist.	436 Sep 20 j 03:47	28°♄13'52	8.25800 AU
direct	430 Sep 13 j 18:54	10°♄19'44		direct	436 Nov 25 j 21:42	24°♄50'27	
evening set	430 Dec 22 j 14:06	17°♄22'01			437 Feb 13 j 05:13	0°♄	
				evening set	437 Mar 07 j 03:27	2°♄38'54	
conjunction	431 Jan 08 j 06:32	19°♄20'56	0°-22'-59				
minimum elong	431 Jan 08 j 06:31	19°♄20'56	0°23'00	conjunction	437 Mar 24 j 12:58	4°♄52'11	-2°-17'00
max. Earth dist.	431 Jan 07 j 21:41	19°♄18'18	10.91893 AU	minimum elong	437 Mar 24 j 12:57	4°♄52'11	2°17'00
morning rise	431 Jan 25 j 01:39	21°♄20'40		max. Earth dist.	437 Mar 24 j 11:28	4°♄51'42	10.20079 AU
retrograde	431 May 08 j 09:29	28°♄38'27		morning rise	437 Apr 11 j 03:14	7°♄07'01	
opposition	431 Jul 18 j 07:22	25°♄17'21	0°-45'-17	retrograde	437 Jul 27 j 10:16	15°♄23'04	
min. Earth dist.	431 Jul 18 j 14:45	25°♄15'58	8.86956 AU	opposition	437 Oct 04 j 00:05	11°♄53'28	-2°-51'-2
direct	431 Sep 25 j 17:46	21°♄58'48		min. Earth dist.	437 Oct 04 j 00:13	11°♄53'27	8.15059 AU
evening set	432 Jan 03 j 08:54	29°♄05'49		direct	437 Dec 09 j 13:15	8°♄28'16	
	432 Jan 10 j 22:45	0°♄		evening set	438 Mar 21 j 10:10	16°♄25'41	
conjunction	432 Jan 20 j 03:08	1°♄06'29	0°-50'-19	conjunction	438 Apr 08 j 00:17	18°♄41'43	-2°-15'-44
minimum elong	432 Jan 20 j 03:06	1°♄06'29	0°50'20	minimum elong	438 Apr 08 j 00:18	18°♄41'44	2°15'44
max. Earth dist.	432 Jan 19 j 18:47	1°♄03'58	10.81662 AU	max. Earth dist.	438 Apr 08 j 01:45	18°♄42'12	10.10253 AU
morning rise	432 Feb 06 j 00:39	3°♄08'11		morning rise	438 Apr 25 j 18:38	20°♄59'10	
retrograde	432 May 20 j 05:29	10°♄34'56		retrograde	438 Aug 11 j 01:41	29°♄21'23	
opposition	432 Jul 29 j 22:26	7°♄12'22	-1°-18'-12	opposition	438 Oct 18 j 03:25	25°♄51'01	-2°-44'-43
min. Earth dist.	432 Jul 30 j 05:12	7°♄11'05	8.75928 AU	min. Earth dist.	438 Oct 18 j 01:20	25°♄51'26	8.06333 AU
direct	432 Oct 06 j 20:47	3°♄53'09		direct	438 Dec 23 j 11:13	22°♄24'31	
evening set	433 Jan 14 j 11:36	11°♄06'27			439 Apr 01 j 04:48	0°♄	
				evening set	439 Apr 05 j 02:28	0°♄29'49	
conjunction	433 Jan 31 j 08:00	13°♄09'12	-1°-16'-2	conjunction	439 Apr 22 j 21:17	2°♄48'21	-2°-6'-24
minimum elong	433 Jan 31 j 07:58	13°♄09'12	1°16'03	minimum elong	439 Apr 22 j 21:20	2°♄48'22	2°06'24
max. Earth dist.	433 Jan 31 j 00:37	13°♄06'57	10.69922 AU	max. Earth dist.	439 Apr 23 j 01:23	2°♄49'42	10.02747 AU
	433 Feb 15 j 12:10	15°♄		morning rise	439 May 10 j 19:34	5°♄08'02	
morning rise	433 Feb 17 j 08:06	15°♄13'11		retrograde	439 Aug 25 j 20:38	13°♄33'33	
retrograde	433 Jun 02 j 10:02	22°♄49'56		opposition	439 Nov 01 j 10:05	10°♄02'50	-2°-28'-17
opposition	433 Aug 11 j 19:22	19°♄25'51	-1°-48'-31	min. Earth dist.	439 Nov 01 j 06:02	10°♄03'40	8.00157 AU
min. Earth dist.	433 Aug 12 j 00:53	19°♄24'47	8.63662 AU	direct	440 Jan 06 j 15:25	6°♄35'09	
direct	433 Oct 19 j 03:40	16°♄05'45		evening set	440 Apr 19 j 02:18	14°♄46'43	
evening set	434 Jan 26 j 23:37	23°♄26'42			440 Apr 20 j 19:32	15°♄	
conjunction	434 Feb 12 j 22:28	25°♄31'49	-1°-38'-53	conjunction	440 May 07 j 01:24	17°♄07'13	-1°-49'-13
minimum elong	434 Feb 12 j 22:26	25°♄31'48	1°38'54	minimum elong	440 May 07 j 01:28	17°♄07'14	1°49'14
max. Earth dist.	434 Feb 12 j 15:52	25°♄29'46	10.57234 AU	max. Earth dist.	440 May 07 j 07:29	17°♄09'13	9.98033 AU
morning rise	434 Mar 02 j 01:35	27°♄38'19		morning rise	440 May 25 j 03:03	19°♄28'34	
	434 Mar 22 j 06:31	0°♄		retrograde	440 Sep 08 j 16:09	27°♄54'14	
retrograde	434 Jun 15 j 22:38	5°♄25'41		opposition	440 Nov 14 j 18:48	24°♄23'37	-2°-2'-25
opposition	434 Aug 24 j 22:56	2°♄00'01	-2°-14'-38	min. Earth dist.	440 Nov 14 j 13:28	24°♄24'44	7.96931 AU
min. Earth dist.	434 Aug 25 j 03:14	1°♄59'11	8.50777 AU	direct	441 Jan 20 j 01:23	20°♄54'56	
	434 Sep 21 j 12:10	30°♄♂		evening set	441 May 04 j 06:55	29°♄10'40	
direct	434 Oct 31 j 18:00	28°♄38'48			441 May 10 j 15:18	0°♄	
	434 Dec 09 j 23:15	0°♄					
evening set	435 Feb 08 j 21:52	6°♄08'26		conjunction	441 May 22 j 09:28	1°♄32'23	-1°-25'-9
conjunction	435 Feb 25 j 23:40	8°♄16'09	-1°-57'-32	minimum elong	441 May 22 j 09:32	1°♄32'24	1°25'09



max. Earth dist.	441 May 22 j 16:58	1°II34'51	9.96422 AU	minimum elong	447 Aug 17 j 17:55	24°Ω49'45	1°37'14
morning rise	441 Jun 09 j 13:27	3°II54'35		max. Earth dist.	447 Aug 18 j 01:33	24°Ω52'08	10.43952 AU
retrograde	441 Sep 23 j 09:21	12°II17'21		morning rise	447 Sep 04 j 04:39	26°Ω59'26	
opposition	441 Nov 29 j 03:36	8°II47'14	-1°-28'-45		447 Sep 30 j 04:31	0°൬	
min. Earth dist.	441 Nov 28 j 21:30	8°II48'30	7.96879 AU	retrograde	447 Dec 13 j 16:36	4°൬29'56	
direct	442 Feb 03 j 16:10	5°II17'47		opposition	448 Feb 18 j 22:52	1°൬08'14	2°12'42
evening set	442 May 19 j 13:47	13°II35'22		min. Earth dist.	448 Feb 18 j 17:46	1°൬09'14	8.50432 AU
					448 Mar 04 j 16:07	30°℞Ω	
conjunction	442 Jun 06 j 18:27	15°II57'24	0°-55'-45	direct	448 Apr 28 j 14:36	27°Ω41'11	
minimum elong	442 Jun 06 j 18:30	15°II57'25	0°55'46		448 Jun 21 j 08:16	0°൬	
max. Earth dist.	442 Jun 07 j 02:48	16°II00'08	9.98020 AU	evening set	448 Aug 12 j 15:17	5°൬28'21	
morning rise	442 Jun 24 j 23:20	18°II19'28					
retrograde	442 Oct 07 j 20:42	26°II36'33		conjunction	448 Aug 30 j 01:29	7°൬36'15	1°56'36
opposition	442 Dec 13 j 10:30	23°II07'22	0°-49'-39	minimum elong	448 Aug 30 j 01:26	7°൬36'14	1°56'36
min. Earth dist.	442 Dec 13 j 04:01	23°II08'43	8.00004 AU	max. Earth dist.	448 Aug 30 j 06:59	7°൬37'56	10.56852 AU
direct	443 Feb 18 j 08:45	19°II37'28		morning rise	448 Sep 16 j 06:49	9°൬42'39	
evening set	443 Jun 03 j 19:40	27°II54'31		retrograde	448 Dec 25 j 05:45	17°൬04'10	
	443 Jun 20 j 00:03	0°☾		opposition	449 Mar 02 j 21:34	13°൬43'55	2°32'35
conjunction	443 Jun 22 j 00:47	0°☾15'52	0°-23'-6	min. Earth dist.	449 Mar 02 j 18:02	13°൬44'36	8.63329 AU
minimum elong	443 Jun 22 j 00:48	0°☾15'52	0°23'07	direct	449 May 12 j 01:14	10°൬18'06	
max. Earth dist.	443 Jun 22 j 09:28	0°☾18'41	10.02709 AU	evening set	449 Aug 25 j 16:59	17°൬56'43	
morning rise	443 Jul 10 j 04:47	2°☾36'48		conjunction	449 Sep 11 j 22:05	20°൬01'32	2°09'58
retrograde	443 Oct 22 j 01:27	10°☾46'06		minimum elong	449 Sep 11 j 22:03	20°൬01'31	2°09'57
opposition	443 Dec 27 j 14:12	7°☾18'09	0°-7'-58	max. Earth dist.	449 Sep 12 j 01:09	20°൬02'28	10.69494 AU
min. Earth dist.	443 Dec 27 j 07:18	7°☾19'34	8.06101 AU	morning rise	449 Sep 28 j 22:33	22°൬04'56	
direct	444 Mar 04 j 00:03	3°☾48'11		retrograde	450 Jan 06 j 10:43	29°൬18'30	
asc. node	444 Mar 08 j 15:18	3°☾49'22		opposition	450 Mar 15 j 14:22	25°൬59'28	2°44'53
evening set	444 Jun 17 j 21:18	12°☾02'21		min. Earth dist.	450 Mar 15 j 11:57	25°൬59'56	8.75644 AU
				direct	450 May 25 j 05:39	22°൬34'56	
conjunction	444 Jul 06 j 01:03	14°☾22'06	0°10'35		450 Sep 06 j 14:36	0°♄	
minimum elong	444 Jul 06 j 01:03	14°☾22'05	0°10'35	evening set	450 Sep 07 j 08:03	0°♄05'08	
behind sun begin	444 Jul 05 j 19:25	14°☾20'17					
behind sun end	444 Jul 06 j 06:40	14°☾23'53		conjunction	450 Sep 24 j 08:38	2°♄07'12	2°17'10
max. Earth dist.	444 Jul 06 j 09:56	14°☾24'56	10.10178 AU	minimum elong	450 Sep 24 j 08:37	2°♄07'12	2°17'09
morning rise	444 Jul 24 j 02:26	16°☾41'00		max. Earth dist.	450 Sep 24 j 10:05	2°♄07'38	10.81263 AU
retrograde	444 Nov 03 j 23:30	24°☾41'08		morning rise	450 Oct 11 j 04:48	4°♄07'58	
opposition	445 Jan 09 j 13:12	21°☾14'37	0°33'26	retrograde	451 Jan 18 j 12:04	11°♄14'48	
min. Earth dist.	445 Jan 09 j 05:42	21°☾16'09	8.14777 AU	opposition	451 Mar 28 j 01:52	7°♄56'46	2°49'40
direct	445 Mar 18 j 12:01	17°☾44'57		min. Earth dist.	451 Mar 28 j 00:34	7°♄57'01	8.86792 AU
evening set	445 Jul 02 j 16:16	25°☾54'18		direct	451 Jun 07 j 01:54	4°♄33'32	
				evening set	451 Sep 19 j 13:25	11°♄55'45	
conjunction	445 Jul 20 j 17:07	28°☾11'39	0°43'00	conjunction	451 Oct 06 j 10:17	13°♄55'32	2°18'19
minimum elong	445 Jul 20 j 17:05	28°☾11'38	0°43'00	minimum elong	451 Oct 06 j 10:18	13°♄55'32	2°18'20
max. Earth dist.	445 Jul 21 j 02:08	28°☾14'32	10.19954 AU	max. Earth dist.	451 Oct 06 j 10:23	13°♄55'34	10.91611 AU
	445 Aug 03 j 21:42	0°Ω		morning rise	451 Oct 23 j 02:58	15°♄54'08	
morning rise	445 Aug 07 j 14:25	0°Ω27'50		retrograde	452 Jan 30 j 08:34	22°♄55'37	
retrograde	445 Nov 17 j 14:02	8°Ω18'02		opposition	452 Apr 08 j 08:56	19°♄38'20	2°47'16
opposition	446 Jan 23 j 06:29	4°Ω53'07	1°11'58	min. Earth dist.	452 Apr 08 j 09:41	19°♄38'11	8.96258 AU
min. Earth dist.	446 Jan 22 j 23:00	4°Ω54'37	8.25490 AU	direct	452 Jun 18 j 13:43	16°♄16'19	
direct	446 Apr 01 j 18:55	1°Ω24'04		evening set	452 Sep 30 j 10:26	23°♄31'26	
evening set	446 Jul 17 j 02:29	9°Ω27'02					
conjunction	446 Aug 03 j 23:08	11°Ω41'26	1°12'23	conjunction	452 Oct 17 j 04:18	25°♄29'25	2°13'46
minimum elong	446 Aug 03 j 23:05	11°Ω41'25	1°12'22	minimum elong	452 Oct 17 j 04:19	25°♄29'26	2°13'46
max. Earth dist.	446 Aug 04 j 07:48	11°Ω44'10	10.31433 AU	max. Earth dist.	452 Oct 17 j 02:02	25°♄28'45	11.00067 AU
morning rise	446 Aug 21 j 15:21	13°Ω54'28		morning rise	452 Nov 02 j 18:37	27°♄26'27	
	446 Aug 30 j 14:31	15°Ω			452 Nov 25 j 23:06	0°ℳ	
retrograde	446 Nov 30 j 19:20	21°Ω34'37		retrograde	453 Feb 10 j 01:10	4°ℳ24'06	
opposition	447 Feb 05 j 17:48	18°Ω11'20	1°45'32	opposition	453 Apr 20 j 12:29	1°ℳ07'20	2°38'13
min. Earth dist.	447 Feb 05 j 11:08	18°Ω12'40	8.37599 AU	min. Earth dist.	453 Apr 20 j 15:43	1°ℳ06'44	9.03638 AU
	447 Mar 28 j 19:43	15°℞Ω			453 May 05 j 22:24	30°℞♄	
direct	447 Apr 15 j 20:30	14°Ω43'11		direct	453 Jun 30 j 20:36	27°♄46'26	
	447 May 03 j 21:10	15°Ω			453 Aug 23 j 19:47	0°ℳ	
evening set	447 Jul 31 j 02:24	22°Ω38'36		evening set	453 Oct 12 j 00:57	4°ℳ55'34	
conjunction	447 Aug 17 j 17:58	24°Ω49'46	1°37'14	conjunction	453 Oct 28 j 16:33	6°ℳ52'17	2°03'56



minimum elong	453 Oct 28 j 16:34	6°♄52'18	2°03'56	conjunction	460 Jan 03 j 11:04	14°♄24'14	0°-10'-30
max. Earth dist.	453 Oct 28 j 11:30	6°♄50'48	11.06320 AU	minimum elong	460 Jan 03 j 11:04	14°♄24'14	0°10'31
morning rise	453 Nov 14 j 05:29	8°♄48'15		behind sun begin	460 Jan 03 j 05:34	14°♄22'37	
	454 Jan 22 j 23:33	15°♄		behind sun end	460 Jan 03 j 16:34	14°♄25'51	
retrograde	454 Feb 21 j 15:54	15°♄43'39		max. Earth dist.	460 Jan 03 j 02:43	14°♄21'45	10.93819 AU
	454 Mar 23 j 22:20	15°♄		morning rise	460 Jan 20 j 05:08	16°♄23'24	
opposition	454 May 02 j 13:29	12°♄27'07	2°23'07	retrograde	460 May 02 j 04:05	23°♄38'16	
min. Earth dist.	454 May 02 j 18:21	12°♄26'13	9.08710 AU	opposition	460 Jul 12 j 02:25	20°♄17'08	0°-30'-5
direct	454 Jul 12 j 22:45	9°♄07'10		min. Earth dist.	460 Jul 12 j 09:18	20°♄15'51	8.89190 AU
	454 Oct 12 j 20:23	15°♄		direct	460 Sep 19 j 19:21	16°♄58'13	
evening set	454 Oct 23 j 10:23	16°♄11'31		evening set	460 Dec 28 j 11:07	24°♄03'41	
conjunction	454 Nov 09 j 00:39	18°♄07'27	1°49'24	conjunction	461 Jan 14 j 04:39	26°♄03'48	0°-38'-11
minimum elong	454 Nov 09 j 00:41	18°♄07'28	1°49'23	minimum elong	461 Jan 14 j 04:38	26°♄03'47	0°38'13
max. Earth dist.	454 Nov 08 j 18:13	18°♄05'34	11.10223 AU	max. Earth dist.	461 Jan 13 j 20:14	26°♄01'16	10.84212 AU
morning rise	454 Nov 25 j 12:58	20°♄02'51		morning rise	461 Jan 31 j 01:02	28°♄04'48	
retrograde	455 Mar 05 j 06:51	26°♄57'37			461 Feb 16 j 19:55	0°♄	
opposition	455 May 14 j 13:10	23°♄40'57	2°02'42	retrograde	461 May 14 j 21:16	5°♄28'07	
min. Earth dist.	455 May 14 j 18:29	23°♄39'58	9.11368 AU	opposition	461 Jul 24 j 15:26	2°♄05'36	-1°-3'-44
direct	455 Jul 24 j 21:38	20°♄21'46		min. Earth dist.	461 Jul 24 j 22:00	2°♄04'22	8.78805 AU
evening set	455 Nov 03 j 16:23	27°♄22'34			461 Aug 23 j 14:39	30°♄	
conjunction	455 Nov 20 j 06:07	29°♄18'12	1°30'45	direct	461 Oct 01 j 19:04	28°♄46'06	
minimum elong	455 Nov 20 j 06:09	29°♄18'12	1°30'45		461 Nov 08 j 22:54	0°♄	
max. Earth dist.	455 Nov 19 j 23:24	29°♄16'14	11.11688 AU	evening set	462 Jan 09 j 10:15	5°♄57'11	
	455 Nov 26 j 04:52	0°♄		conjunction	462 Jan 26 j 05:34	7°♄59'12	-1°-4'-49
morning rise	455 Dec 06 j 18:28	1°♄13'31		minimum elong	462 Jan 26 j 05:31	7°♄59'12	1°04'50
retrograde	456 Mar 16 j 00:39	8°♄09'10		max. Earth dist.	462 Jan 25 j 21:09	7°♄56'39	10.73143 AU
opposition	456 May 25 j 12:26	4°♄52'06	1°37'43	morning rise	462 Feb 12 j 04:37	10°♄02'23	
min. Earth dist.	456 May 25 j 18:38	4°♄50'58	9.11561 AU		462 Mar 31 j 08:36	15°♄	
direct	456 Aug 04 j 17:04	1°♄33'26		retrograde	462 May 27 j 20:57	17°♄35'18	
evening set	456 Nov 13 j 21:01	8°♄32'03			462 Jul 26 j 16:43	15°♄	
conjunction	456 Nov 30 j 10:36	10°♄27'49	1°08'41	opposition	462 Aug 06 j 10:10	14°♄11'18	-1°-35'-27
minimum elong	456 Nov 30 j 10:39	10°♄27'50	1°08'40	min. Earth dist.	462 Aug 06 j 16:24	14°♄10'06	8.67185 AU
max. Earth dist.	456 Nov 30 j 02:35	10°♄25'28	11.10690 AU	direct	462 Oct 13 j 23:48	10°♄51'01	
morning rise	456 Dec 16 j 23:44	12°♄23'31			462 Dec 24 j 23:55	15°♄	
retrograde	457 Mar 27 j 17:41	19°♄21'34		evening set	463 Jan 21 j 18:04	18°♄09'09	
opposition	457 Jun 06 j 12:15	16°♄03'51	1°09'01	conjunction	463 Feb 07 j 15:44	20°♄13'24	-1°-29'-8
min. Earth dist.	457 Jun 06 j 19:45	16°♄02'28	9.09312 AU	minimum elong	463 Feb 07 j 15:42	20°♄13'23	1°29'09
direct	457 Aug 16 j 09:14	12°♄45'25		max. Earth dist.	463 Feb 07 j 08:45	20°♄11'14	10.61056 AU
evening set	457 Nov 25 j 01:52	19°♄43'26		morning rise	463 Feb 24 j 17:40	22°♄18'57	
conjunction	457 Dec 11 j 15:45	21°♄39'43	0°43'54		463 Jun 03 j 14:02	0°♄	
minimum elong	457 Dec 11 j 15:47	21°♄39'43	0°43'54	retrograde	463 Jun 10 j 04:42	0°♄02'13	
max. Earth dist.	457 Dec 11 j 06:22	21°♄36'57	11.07288 AU		463 Jun 16 j 21:00	30°♄	
morning rise	457 Dec 28 j 06:16	23°♄36'12		opposition	463 Aug 19 j 10:57	26°♄36'44	-2°-3'-41
	458 Mar 11 j 12:04	0°♄		min. Earth dist.	463 Aug 19 j 15:57	26°♄35'46	8.54817 AU
retrograde	458 Apr 08 j 15:29	0°♄38'19		direct	463 Oct 26 j 12:51	23°♄15'31	
	458 May 07 j 06:05	30°♄			464 Jan 28 j 17:38	0°♄	
opposition	458 Jun 18 j 13:58	27°♄19'39	0°37'28	evening set	464 Feb 03 j 11:47	0°♄41'51	
min. Earth dist.	458 Jun 18 j 22:10	27°♄18'08	9.04715 AU	conjunction	464 Feb 20 j 12:21	2°♄48'35	-1°-49'-50
direct	458 Aug 28 j 04:11	24°♄01'15		minimum elong	464 Feb 20 j 12:18	2°♄48'34	1°49'51
	458 Nov 27 j 13:32	0°♄		max. Earth dist.	464 Feb 20 j 07:31	2°♄47'05	10.48476 AU
evening set	458 Dec 06 j 08:29	1°♄00'09		morning rise	464 Mar 08 j 17:22	4°♄56'45	
conjunction	458 Dec 22 j 23:15	2°♄57'21	0°17'14	retrograde	464 Jun 22 j 23:04	12°♄50'37	
minimum elong	458 Dec 22 j 23:16	2°♄57'21	0°17'15	opposition	464 Aug 31 j 18:23	9°♄23'42	-2°-26'-43
max. Earth dist.	458 Dec 22 j 14:12	2°♄54'40	11.01602 AU	min. Earth dist.	464 Aug 31 j 21:24	9°♄23'07	8.42259 AU
morning rise	459 Jan 08 j 15:25	4°♄55'00		direct	464 Nov 07 j 07:05	6°♄01'28	
retrograde	459 Apr 20 j 18:47	12°♄02'45		evening set	465 Feb 15 j 16:17	13°♄36'49	
opposition	459 Jun 30 j 18:23	8°♄42'56	0°04'03	conjunction	465 Mar 04 j 20:07	15°♄46'12	-2°-5'-34
min. Earth dist.	459 Jul 01 j 01:58	8°♄41'31	8.97931 AU	minimum elong	465 Mar 04 j 20:05	15°♄46'11	2°05'35
desc. node	459 Aug 14 j 18:22	5°♄55'02		max. Earth dist.	465 Mar 04 j 17:25	15°♄45'20	10.36009 AU
direct	459 Sep 08 j 22:41	5°♄24'23		morning rise	465 Mar 22 j 04:35	17°♄57'07	
evening set	459 Dec 17 j 19:00	12°♄25'45		retrograde	465 Jul 07 j 01:28	26°♄01'11	
				opposition	465 Sep 14 j 08:30	22°♄33'00	-2°-42'-52



min. Earth dist.	465 Sep 14 j 09:25	22° <del>✕</del> 32'50	8.30142 AU	opposition	471 Dec 07 j 14:10	17° <del>Π</del> 06'35	-1°-7'-7
direct	465 Nov 20 j 08:50	19° <del>✕</del> 09'40		min. Earth dist.	471 Dec 07 j 07:09	17° <del>Π</del> 08'02	7.99618 AU
evening set	466 Mar 01 j 08:04	26° <del>✕</del> 54'24		direct	472 Feb 12 j 07:44	13° <del>Π</del> 37'26	
				evening set	472 May 27 j 13:05	21° <del>Π</del> 54'31	
conjunction	466 Mar 18 j 15:40	29° <del>✕</del> 06'33	-2°-15'-2				
minimum elong	466 Mar 18 j 15:39	29° <del>✕</del> 06'32	2°15'03	conjunction	472 Jun 14 j 18:16	24° <del>Π</del> 16'09	0°-37'-33
max. Earth dist.	466 Mar 18 j 14:42	29° <del>✕</del> 06'14	10.24331 AU	minimum elong	472 Jun 14 j 18:18	24° <del>Π</del> 16'10	0°37'34
	466 Mar 25 j 14:46	0° <del>Υ</del>		max. Earth dist.	472 Jun 15 j 03:33	24° <del>Π</del> 19'10	10.01589 AU
morning rise	466 Apr 05 j 04:03	1° <del>Υ</del> 20'15		morning rise	472 Jul 02 j 22:39	26° <del>Π</del> 37'32	
retrograde	466 Jul 21 j 10:42	9° <del>Υ</del> 33'22			472 Jul 30 j 20:20	0° <del>☾</del>	
opposition	466 Sep 28 j 04:55	6° <del>Υ</del> 04'10	-2°-50'-34	retrograde	472 Oct 15 j 07:22	4° <del>☾</del> 50'13	
min. Earth dist.	466 Sep 28 j 04:17	6° <del>Υ</del> 04'17	8.19144 AU	opposition	472 Dec 20 j 19:34	1° <del>☾</del> 22'13	0°-26'-13
direct	466 Dec 03 j 19:37	2° <del>Υ</del> 39'39		min. Earth dist.	472 Dec 20 j 12:25	1° <del>☾</del> 23'41	8.04262 AU
evening set	467 Mar 15 j 10:49	10° <del>Υ</del> 33'34			473 Jan 06 j 21:00	30° <del>℞</del> <del>Π</del>	
				direct	473 Feb 25 j 22:23	27° <del>Π</del> 52'48	
conjunction	467 Apr 01 j 22:44	12° <del>Υ</del> 48'29	-2°-17'-12		473 Apr 16 j 06:12	0° <del>☾</del>	
minimum elong	467 Apr 01 j 22:45	12° <del>Υ</del> 48'29	2°17'12	evening set	473 Jun 11 j 17:01	6° <del>☾</del> 08'11	
max. Earth dist.	467 Apr 01 j 23:39	12° <del>Υ</del> 48'47	10.14117 AU				
morning rise	467 Apr 19 j 15:19	15° <del>Υ</del> 04'53		conjunction	473 Jun 29 j 21:38	8° <del>☾</del> 28'40	0°-4'-7
retrograde	467 Aug 05 j 01:03	23° <del>Υ</del> 25'04		minimum elong	473 Jun 29 j 21:39	8° <del>☾</del> 28'40	0°04'08
opposition	467 Oct 12 j 06:47	19° <del>Υ</del> 55'10	-2°-48'-38	behind sun begin	473 Jun 29 j 14:24	8° <del>☾</del> 26'21	
min. Earth dist.	467 Oct 12 j 04:49	19° <del>Υ</del> 55'35	8.09911 AU	behind sun end	473 Jun 30 j 04:54	8° <del>☾</del> 31'00	
direct	467 Dec 17 j 14:53	16° <del>Υ</del> 29'30		max. Earth dist.	473 Jun 30 j 06:51	8° <del>☾</del> 31'38	10.07605 AU
evening set	468 Mar 28 j 23:40	24° <del>Υ</del> 31'46		morning rise	473 Jul 18 j 00:12	10° <del>☾</del> 48'28	
				asc. node	473 Aug 14 j 17:37	14° <del>☾</del> 08'10	
conjunction	468 Apr 15 j 16:10	26° <del>Υ</del> 49'14	-2°-11'-24	retrograde	473 Oct 29 j 10:07	18° <del>☾</del> 52'43	
minimum elong	468 Apr 15 j 16:12	26° <del>Υ</del> 49'15	2°11'24	opposition	474 Jan 03 j 21:01	15° <del>☾</del> 26'02	0°15'38
max. Earth dist.	468 Apr 15 j 19:15	26° <del>Υ</del> 50'15	10.05984 AU	min. Earth dist.	474 Jan 03 j 14:23	15° <del>☾</del> 27'23	8.11517 AU
morning rise	468 May 03 j 12:50	29° <del>Υ</del> 08'02		direct	474 Mar 12 j 12:01	11° <del>☾</del> 56'38	
	468 May 10 j 09:11	0° <del>♄</del>		evening set	474 Jun 26 j 15:43	20° <del>☾</del> 08'17	
retrograde	468 Aug 18 j 19:03	7° <del>♄</del> 32'38					
opposition	468 Oct 25 j 12:44	4° <del>♄</del> 02'25	-2°-36'-34	conjunction	474 Jul 14 j 18:01	22° <del>☾</del> 26'45	0°29'11
min. Earth dist.	468 Oct 25 j 09:22	4° <del>♄</del> 03'06	8.03020 AU	minimum elong	474 Jul 14 j 17:59	22° <del>☾</del> 26'44	0°29'11
direct	468 Dec 30 j 17:40	0° <del>♄</del> 35'38		max. Earth dist.	474 Jul 15 j 02:18	22° <del>☾</del> 29'24	10.16044 AU
evening set	469 Apr 12 j 20:49	8° <del>♄</del> 44'46		morning rise	474 Aug 01 j 17:12	24° <del>☾</del> 44'11	
					474 Sep 18 j 01:50	0° <del>♄</del>	
conjunction	469 Apr 30 j 17:53	11° <del>♄</del> 04'24	-1°-57'-34	retrograde	474 Nov 12 j 03:54	2° <del>♄</del> 38'53	
minimum elong	469 Apr 30 j 17:56	11° <del>♄</del> 04'25	1°57'34		475 Jan 08 j 02:56	30° <del>℞</del> <del>☾</del>	
max. Earth dist.	469 Apr 30 j 23:22	11° <del>♄</del> 06'12	10.00459 AU	opposition	475 Jan 17 j 17:16	29° <del>☾</del> 13'37	0°55'44
morning rise	469 May 18 j 18:13	13° <del>♄</del> 25'03		min. Earth dist.	475 Jan 17 j 11:20	29° <del>☾</del> 14'50	8.21002 AU
	469 May 31 j 07:54	15° <del>♄</del>		direct	475 Mar 26 j 22:34	25° <del>☾</del> 44'33	
retrograde	469 Sep 02 j 14:09	21° <del>♄</del> 51'01			475 Jun 08 j 02:51	0° <del>♄</del>	
opposition	469 Nov 08 j 21:11	18° <del>♄</del> 20'48	-2°-14'-39	evening set	475 Jul 11 j 06:30	3° <del>♄</del> 50'40	
min. Earth dist.	469 Nov 08 j 16:14	18° <del>♄</del> 21'50	7.98909 AU				
	470 Jan 03 j 01:50	15° <del>♄</del>		conjunction	475 Jul 29 j 04:59	6° <del>♄</del> 06'24	1°00'07
direct	470 Jan 14 j 02:55	14° <del>♄</del> 53'02		minimum elong	475 Jul 29 j 04:57	6° <del>♄</del> 06'23	1°00'07
	470 Jan 25 j 03:20	15° <del>♄</del>		max. Earth dist.	475 Jul 29 j 12:00	6° <del>♄</del> 08'38	10.26435 AU
evening set	470 Apr 27 j 23:56	23° <del>♄</del> 07'01		morning rise	475 Aug 15 j 23:37	8° <del>♄</del> 20'54	
					475 Oct 21 j 17:41	15° <del>♄</del>	
conjunction	470 May 16 j 01:02	25° <del>♄</del> 28'10	-1°-36'-20	retrograde	475 Nov 25 j 11:59	16° <del>♄</del> 05'39	
minimum elong	470 May 16 j 01:06	25° <del>♄</del> 28'12	1°36'20		475 Dec 30 j 18:34	15° <del>℞</del> <del>♄</del>	
max. Earth dist.	470 May 16 j 08:43	25° <del>♄</del> 30'42	9.97870 AU	opposition	476 Jan 31 j 07:42	12° <del>♄</del> 41'51	1°31'43
morning rise	470 Jun 03 j 04:10	27° <del>♄</del> 49'59		min. Earth dist.	476 Jan 31 j 02:08	12° <del>♄</del> 42'58	8.32170 AU
	470 Jun 20 j 12:37	0° <del>Π</del>		direct	476 Apr 09 j 04:32	9° <del>♄</del> 13'24	
retrograde	470 Sep 17 j 07:51	6° <del>Π</del> 14'06			476 Jul 05 j 21:37	15° <del>♄</del>	
opposition	470 Nov 23 j 06:18	2° <del>Π</del> 44'15	-1°-44'-8	evening set	476 Jul 24 j 11:14	17° <del>♄</del> 12'28	
min. Earth dist.	470 Nov 22 j 23:55	2° <del>Π</del> 45'35	7.97787 AU				
	470 Dec 31 j 09:05	30° <del>℞</del> <del>♄</del>		conjunction	476 Aug 11 j 05:00	19° <del>♄</del> 25'07	1°27'07
direct	471 Jan 28 j 16:35	29° <del>♄</del> 15'41		minimum elong	476 Aug 11 j 04:57	19° <del>♄</del> 25'06	1°27'06
	471 Feb 25 j 20:08	0° <del>Π</del>		max. Earth dist.	476 Aug 11 j 11:02	19° <del>♄</del> 27'00	10.38179 AU
evening set	471 May 13 j 06:23	7° <del>Π</del> 32'18		morning rise	476 Aug 28 j 18:22	21° <del>♄</del> 36'20	
				retrograde	476 Dec 07 j 12:39	29° <del>♄</del> 11'18	
conjunction	471 May 31 j 10:20	9° <del>Π</del> 54'09	-1°-9'-3	opposition	477 Feb 12 j 15:41	25° <del>♄</del> 48'54	2°01'50
minimum elong	471 May 31 j 10:24	9° <del>Π</del> 54'10	1°09'03	min. Earth dist.	477 Feb 12 j 10:27	25° <del>♄</del> 49'56	8.44377 AU
max. Earth dist.	471 May 31 j 19:13	9° <del>Π</del> 57'03	9.98288 AU	direct	477 Apr 23 j 02:22	22° <del>♄</del> 21'17	
morning rise	471 Jun 18 j 14:54	12° <del>Π</del> 16'12			477 Aug 05 j 12:13	0° <del>♄</del>	
retrograde	471 Oct 01 j 21:53	20° <del>Π</del> 35'41		evening set	477 Aug 07 j 05:11	0° <del>♄</del> 12'23	



conjunction	477 Aug 24 j 17:52	2°♎21'48	1°48'58		483 Nov 17 j 07:22	15°♍	
minimum elong	477 Aug 24 j 17:49	2°♎21'47	1°48'58	morning rise	483 Nov 21 j 00:44	15°♍25'48	
max. Earth dist.	477 Aug 24 j 23:02	2°♎23'24	10.50618 AU	retrograde	484 Feb 28 j 14:17	22°♍20'22	
morning rise	477 Sep 11 j 01:41	4°♎29'43		opposition	484 May 08 j 17:15	19°♍03'30	2°12'18
retrograde	477 Dec 20 j 05:43	11°♎55'23		min. Earth dist.	484 May 08 j 21:22	19°♍02'45	9.10413 AU
opposition	478 Feb 25 j 17:06	8°♎34'18	2°24'59	direct	484 Jul 19 j 01:54	15°♍43'45	
min. Earth dist.	478 Feb 25 j 12:41	8°♎35'10	8.56955 AU	evening set	484 Oct 29 j 04:19	22°♍45'37	
direct	478 May 06 j 16:20	5°♎07'42					
evening set	478 Aug 20 j 11:55	12°♎50'22		conjunction	484 Nov 14 j 18:08	24°♍41'15	1°39'25
				minimum elong	484 Nov 14 j 18:10	24°♍41'16	1°39'25
conjunction	478 Sep 06 j 19:28	14°♎56'38	2°05'00	max. Earth dist.	484 Nov 14 j 12:21	24°♍39'34	11.11584 AU
minimum elong	478 Sep 06 j 19:26	14°♎56'37	2°04'59	morning rise	484 Dec 01 j 06:29	26°♍36'29	
max. Earth dist.	478 Sep 06 j 23:44	14°♎57'56	10.63105 AU		485 Jan 02 j 04:21	0°♊	
morning rise	478 Sep 23 j 21:58	17°♎01'25		retrograde	485 Mar 11 j 05:10	3°♊31'01	
retrograde	479 Jan 01 j 14:44	24°♎18'39		opposition	485 May 20 j 15:59	0°♊14'04	1°49'13
opposition	479 Mar 10 j 12:35	20°♎58'46	2°40'38	min. Earth dist.	485 May 20 j 21:21	0°♊13'05	9.12353 AU
min. Earth dist.	479 Mar 10 j 09:53	20°♎59'17	8.69282 AU		485 May 23 j 20:42	30°♑♍	
direct	479 May 19 j 23:04	17°♎33'18		direct	485 Jul 30 j 22:42	26°♍55'07	
evening set	479 Sep 02 j 07:32	25°♎07'27			485 Oct 02 j 21:28	0°♊	
				evening set	485 Nov 09 j 08:48	3°♊54'02	
conjunction	479 Sep 19 j 10:11	27°♎10'49	2°14'53				
minimum elong	479 Sep 19 j 10:10	27°♎10'48	2°14'52	conjunction	485 Nov 25 j 22:15	5°♊49'32	1°18'46
max. Earth dist.	479 Sep 19 j 12:34	27°♎11'32	10.75051 AU	minimum elong	485 Nov 25 j 22:18	5°♊49'33	1°18'46
morning rise	479 Oct 06 j 08:07	29°♎12'48		max. Earth dist.	485 Nov 25 j 15:44	5°♊47'37	11.12342 AU
	479 Oct 13 j 01:14	0°♊		morning rise	485 Dec 12 j 11:02	7°♊44'52	
retrograde	480 Jan 13 j 17:50	6°♊22'45		retrograde	486 Mar 22 j 21:22	14°♊40'58	
opposition	480 Mar 22 j 02:27	3°♊03'53	2°48'40	opposition	486 Jun 01 j 14:48	11°♊23'39	1°22'03
min. Earth dist.	480 Mar 22 j 01:35	3°♊04'03	8.80800 AU	min. Earth dist.	486 Jun 01 j 20:19	11°♊22'38	9.11852 AU
	480 May 11 j 10:35	30°♑♎		direct	486 Aug 11 j 16:15	8°♊05'18	
direct	480 May 31 j 22:17	29°♎39'37		evening set	486 Nov 20 j 12:40	15°♊02'42	
	480 Jun 21 j 08:46	0°♊					
evening set	480 Sep 13 j 17:02	7°♊05'34		conjunction	486 Dec 07 j 02:24	16°♊58'30	0°55'07
				minimum elong	486 Dec 07 j 02:26	16°♊58'31	0°55'08
conjunction	480 Sep 30 j 15:26	9°♊06'26	2°18'38	max. Earth dist.	486 Dec 06 j 19:56	16°♊56'36	11.10663 AU
minimum elong	480 Sep 30 j 15:26	9°♊06'26	2°18'38	morning rise	486 Dec 23 j 16:04	18°♊54'22	
max. Earth dist.	480 Sep 30 j 15:27	9°♊06'26	10.85953 AU	retrograde	487 Apr 03 j 18:21	25°♊53'39	
morning rise	480 Oct 17 j 09:44	11°♊06'04		opposition	487 Jun 13 j 14:54	22°♊35'42	0°51'41
retrograde	481 Jan 24 j 14:04	18°♊09'59		min. Earth dist.	487 Jun 13 j 20:34	22°♊34'40	9.08937 AU
opposition	481 Apr 03 j 11:07	14°♊51'56	2°49'19	direct	487 Aug 23 j 09:28	19°♊17'43	
min. Earth dist.	481 Apr 03 j 11:35	14°♊51'51	8.91031 AU	evening set	487 Dec 01 j 17:46	26°♊15'07	
direct	481 Jun 13 j 14:11	11°♊28'53					
evening set	481 Sep 25 j 17:30	18°♊47'19		conjunction	487 Dec 18 j 08:05	28°♊11'36	0°29'14
				minimum elong	487 Dec 18 j 08:06	28°♊11'37	0°29'14
conjunction	481 Oct 12 j 12:35	20°♊46'08	2°16'30	max. Earth dist.	487 Dec 18 j 00:49	28°♊09'28	11.06602 AU
minimum elong	481 Oct 12 j 12:36	20°♊46'09	2°16'30		488 Jan 02 j 18:07	0°♋	
max. Earth dist.	481 Oct 12 j 10:55	20°♊45'39	10.95373 AU	morning rise	488 Jan 03 j 23:15	0°♋08'25	
morning rise	481 Oct 29 j 04:03	22°♊43'55		retrograde	488 Apr 14 j 18:36	7°♋12'23	
retrograde	482 Feb 05 j 07:51	29°♊43'13		opposition	488 Jun 24 j 17:19	3°♋53'36	0°19'03
opposition	482 Apr 15 j 15:50	26°♊25'47	2°43'04	min. Earth dist.	488 Jun 24 j 23:53	3°♋52'24	9.03701 AU
min. Earth dist.	482 Apr 15 j 16:54	26°♊25'35	8.99566 AU	direct	488 Sep 03 j 01:29	0°♋35'43	
direct	482 Jun 26 j 00:40	23°♊03'56		evening set	488 Dec 12 j 01:55	7°♋34'43	
	482 Oct 05 j 03:44	0°♌					
evening set	482 Oct 07 j 10:20	0°♌15'42		conjunction	488 Dec 28 j 17:04	9°♋32'14	0°01'59
				minimum elong	488 Dec 28 j 17:05	9°♋32'14	0°01'59
conjunction	482 Oct 24 j 03:00	2°♌12'59	2°08'54	behind sun begin	488 Dec 28 j 10:06	9°♋30'12	
minimum elong	482 Oct 24 j 03:01	2°♌12'59	2°08'54	behind sun end	488 Dec 29 j 00:03	9°♋34'17	
max. Earth dist.	482 Oct 24 j 00:46	2°♌12'19	11.02948 AU	max. Earth dist.	488 Dec 28 j 08:41	9°♋29'46	11.00288 AU
morning rise	482 Nov 09 j 16:25	4°♌09'23		morning rise	489 Jan 14 j 10:10	11°♋30'21	
retrograde	483 Feb 17 j 00:56	11°♌05'34		desc. node	489 Jan 23 j 21:05	12°♋35'12	
opposition	483 Apr 27 j 17:35	7°♌48'32	2°30'30	retrograde	489 Apr 26 j 22:45	18°♋40'33	
min. Earth dist.	483 Apr 27 j 19:52	7°♌48'07	9.06100 AU	opposition	489 Jul 06 j 22:54	15°♋20'42	0°-14'-47
direct	483 Jul 08 j 03:41	4°♌27'50		min. Earth dist.	489 Jul 07 j 06:04	15°♋19'22	8.96313 AU
evening set	483 Oct 18 j 21:25	11°♌33'59		direct	489 Sep 14 j 20:36	12°♋02'38	
				evening set	489 Dec 23 j 14:36	19°♋04'49	
conjunction	483 Nov 04 j 12:19	13°♌30'13	1°56'21				
minimum elong	483 Nov 04 j 12:21	13°♌30'14	1°56'21	conjunction	490 Jan 09 j 07:10	21°♋03'45	0°-25'-49
max. Earth dist.	483 Nov 04 j 08:40	13°♌29'09	11.08413 AU	minimum elong	490 Jan 09 j 07:08	21°♋03'45	0°25'51



max. Earth dist.	490 Jan 08 j 23:01	21° $\text{♁}$ 01'19	10.91916 AU	minimum elong	496 Mar 25 j 14:27	6° $\text{♁}$ 35'35	2°17'10
morning rise	490 Jan 26 j 02:20	23° $\text{♁}$ 03'29		max. Earth dist.	496 Mar 25 j 13:29	6° $\text{♁}$ 35'16	10.20202 AU
	490 Apr 18 j 13:23	0° $\text{♁}$		morning rise	496 Apr 12 j 04:48	8° $\text{♁}$ 50'26	
retrograde	490 May 09 j 11:22	0° $\text{♁}$ 21'22		retrograde	496 Jul 28 j 11:23	17° $\text{♁}$ 06'27	
	490 May 30 j 14:15	30° $\text{♁}$		opposition	496 Oct 05 j 00:50	13° $\text{♁}$ 36'55	-2°-50'-47
opposition	490 Jul 19 j 08:50	27° $\text{♁}$ 00'13	0°-48'-41	min. Earth dist.	496 Oct 05 j 00:35	13° $\text{♁}$ 36'59	8.15176 AU
min. Earth dist.	490 Jul 19 j 15:34	26° $\text{♁}$ 58'57	8.87000 AU	direct	496 Dec 10 j 13:21	10° $\text{♁}$ 11'48	
direct	490 Sep 26 j 19:27	23° $\text{♁}$ 41'43		evening set	497 Mar 22 j 11:36	18° $\text{♁}$ 09'16	
	490 Dec 28 j 11:06	0° $\text{♁}$					
evening set	491 Jan 04 j 09:27	0° $\text{♁}$ 48'36		conjunction	497 Apr 09 j 01:54	20° $\text{♁}$ 25'22	-2°-15'-11
				minimum elong	497 Apr 09 j 01:56	20° $\text{♁}$ 25'22	2°15'12
conjunction	491 Jan 21 j 03:49	2° $\text{♁}$ 49'17	0°-52'-59	max. Earth dist.	497 Apr 09 j 03:23	20° $\text{♁}$ 25'51	10.10363 AU
minimum elong	491 Jan 21 j 03:47	2° $\text{♁}$ 49'17	0°53'00	morning rise	497 Apr 26 j 20:22	22° $\text{♁}$ 42'51	
max. Earth dist.	491 Jan 20 j 20:32	2° $\text{♁}$ 47'05	10.81729 AU		497 Jul 08 j 02:16	0° $\text{♁}$	
morning rise	491 Feb 07 j 01:18	4° $\text{♁}$ 50'59		retrograde	497 Aug 12 j 04:29	1° $\text{♁}$ 04'57	
retrograde	491 May 22 j 07:13	12° $\text{♁}$ 17'48			497 Sep 16 j 10:10	30° $\text{♁}$	
opposition	491 Jul 31 j 23:48	8° $\text{♁}$ 55'13	-1°-21'-19	opposition	497 Oct 19 j 04:08	27° $\text{♁}$ 34'40	-2°-43'-37
min. Earth dist.	491 Aug 01 j 05:38	8° $\text{♁}$ 54'06	8.76034 AU	min. Earth dist.	497 Oct 19 j 01:54	27° $\text{♁}$ 35'07	8.06441 AU
direct	491 Oct 08 j 21:10	5° $\text{♁}$ 36'03		direct	497 Dec 24 j 10:33	24° $\text{♁}$ 08'12	
evening set	492 Jan 16 j 12:21	12° $\text{♁}$ 49'14			498 Mar 19 j 05:21	0° $\text{♁}$	
				evening set	498 Apr 06 j 04:02	2° $\text{♁}$ 13'35	
conjunction	492 Feb 02 j 08:46	14° $\text{♁}$ 51'59	-1°-18'-24				
minimum elong	492 Feb 02 j 08:43	14° $\text{♁}$ 51'58	1°18'25	conjunction	498 Apr 23 j 22:58	4° $\text{♁}$ 32'09	-2°-5'-11
max. Earth dist.	492 Feb 02 j 01:22	14° $\text{♁}$ 49'43	10.70052 AU	minimum elong	498 Apr 23 j 23:01	4° $\text{♁}$ 32'10	2°05'12
	492 Feb 03 j 11:00	15° $\text{♁}$		max. Earth dist.	498 Apr 24 j 02:28	4° $\text{♁}$ 33'18	10.02861 AU
morning rise	492 Feb 19 j 08:57	16° $\text{♁}$ 55'57		morning rise	498 May 11 j 21:27	6° $\text{♁}$ 51'54	
retrograde	492 Jun 03 j 11:31	24° $\text{♁}$ 32'44			498 Aug 09 j 05:18	15° $\text{♁}$	
opposition	492 Aug 12 j 20:34	21° $\text{♁}$ 08'38	-1°-51'-12	retrograde	498 Aug 26 j 23:10	15° $\text{♁}$ 17'12	
min. Earth dist.	492 Aug 13 j 02:00	21° $\text{♁}$ 07'36	8.63814 AU		498 Sep 13 j 15:19	15° $\text{♁}$	
direct	492 Oct 20 j 04:28	17° $\text{♁}$ 48'34		opposition	498 Nov 02 j 10:50	11° $\text{♁}$ 46'35	-2°-26'-22
evening set	493 Jan 28 j 00:30	25° $\text{♁}$ 09'29		min. Earth dist.	498 Nov 02 j 07:14	11° $\text{♁}$ 47'20	8.00274 AU
				direct	499 Jan 07 j 16:00	8° $\text{♁}$ 18'54	
conjunction	493 Feb 13 j 23:19	27° $\text{♁}$ 14'36	-1°-40'-50		499 Apr 09 j 04:39	15° $\text{♁}$	
minimum elong	493 Feb 13 j 23:17	27° $\text{♁}$ 14'35	1°40'51	evening set	499 Apr 21 j 03:59	16° $\text{♁}$ 30'34	
max. Earth dist.	493 Feb 13 j 16:01	27° $\text{♁}$ 12'20	10.57393 AU				
morning rise	493 Mar 03 j 02:38	29° $\text{♁}$ 21'06		conjunction	499 May 09 j 03:12	18° $\text{♁}$ 51'05	-1°-47'-24
	493 Mar 08 j 11:58	0° $\text{♁}$		minimum elong	499 May 09 j 03:16	18° $\text{♁}$ 51'06	1°47'25
retrograde	493 Jun 17 j 00:37	7° $\text{♁}$ 08'27		max. Earth dist.	499 May 09 j 08:11	18° $\text{♁}$ 52'43	9.98165 AU
opposition	493 Aug 26 j 00:02	3° $\text{♁}$ 42'51	-2°-16'-44	morning rise	499 May 27 j 05:07	21° $\text{♁}$ 12'28	
min. Earth dist.	493 Aug 26 j 04:55	3° $\text{♁}$ 41'54	8.50937 AU	retrograde	499 Sep 10 j 17:25	29° $\text{♁}$ 37'52	
direct	493 Nov 01 j 17:56	0° $\text{♁}$ 21'40		opposition	499 Nov 16 j 19:29	26° $\text{♁}$ 07'21	-1°-59'-49
evening set	494 Feb 09 j 22:46	7° $\text{♁}$ 51'20		min. Earth dist.	499 Nov 16 j 15:01	26° $\text{♁}$ 08'17	7.97067 AU
				direct	500 Jan 22 j 03:14	22° $\text{♁}$ 38'39	
conjunction	494 Feb 27 j 00:38	9° $\text{♁}$ 59'02	-1°-58'-58		500 Apr 28 j 05:30	0° $\text{♁}$	
minimum elong	494 Feb 27 j 00:36	9° $\text{♁}$ 59'01	1°58'58	evening set	500 May 05 j 08:44	0° $\text{♁}$ 54'28	
max. Earth dist.	494 Feb 26 j 18:35	9° $\text{♁}$ 57'08	10.44403 AU				
morning rise	494 Mar 16 j 07:22	12° $\text{♁}$ 08'16		conjunction	500 May 23 j 11:21	3° $\text{♁}$ 16'11	-1°-22'-50
retrograde	494 Jun 30 j 20:26	20° $\text{♁}$ 06'12		minimum elong	500 May 23 j 11:25	3° $\text{♁}$ 16'12	1°22'51
opposition	494 Sep 08 j 10:09	16° $\text{♁}$ 39'06	-2°-36'-13	max. Earth dist.	500 May 23 j 17:46	3° $\text{♁}$ 18'17	9.96571 AU
min. Earth dist.	494 Sep 08 j 14:00	16° $\text{♁}$ 38'20	8.38081 AU	morning rise	500 Jun 10 j 15:32	5° $\text{♁}$ 38'22	
direct	494 Nov 14 j 16:46	13° $\text{♁}$ 16'40		retrograde	500 Sep 24 j 09:01	14° $\text{♁}$ 00'49	
evening set	495 Feb 23 j 08:09	20° $\text{♁}$ 55'42		opposition	500 Nov 30 j 04:08	10° $\text{♁}$ 30'48	-1°-25'-37
				min. Earth dist.	500 Nov 29 j 22:43	10° $\text{♁}$ 31'56	7.97032 AU
conjunction	495 Mar 12 j 13:44	23° $\text{♁}$ 06'11	-2°-11'-27	direct	501 Feb 04 j 17:58	7° $\text{♁}$ 01'20	
minimum elong	495 Mar 12 j 13:42	23° $\text{♁}$ 06'10	2°11'28	evening set	501 May 20 j 15:29	15° $\text{♁}$ 18'55	
max. Earth dist.	495 Mar 12 j 10:08	23° $\text{♁}$ 05'02	10.31774 AU				
morning rise	495 Mar 30 j 00:09	25° $\text{♁}$ 18'13		conjunction	501 Jun 07 j 20:13	17° $\text{♁}$ 40'57	0°-53'-6
	495 May 10 j 14:05	0° $\text{♁}$		minimum elong	501 Jun 07 j 20:16	17° $\text{♁}$ 40'58	0°53'07
retrograde	495 Jul 15 j 00:11	3° $\text{♁}$ 25'57		max. Earth dist.	501 Jun 08 j 03:55	17° $\text{♁}$ 43'28	9.98184 AU
	495 Sep 21 j 14:03	30° $\text{♁}$		morning rise	501 Jun 26 j 01:09	20° $\text{♁}$ 02'59	
opposition	495 Sep 22 j 02:30	29° $\text{♁}$ 57'31	-2°-48'-1	retrograde	501 Oct 08 j 20:20	28° $\text{♁}$ 19'44	
min. Earth dist.	495 Sep 22 j 04:30	29° $\text{♁}$ 57'07	8.25936 AU	opposition	501 Dec 14 j 10:56	24° $\text{♁}$ 50'37	0°-46'-12
direct	495 Nov 27 j 23:40	26° $\text{♁}$ 33'44		min. Earth dist.	501 Dec 14 j 04:33	24° $\text{♁}$ 51'56	8.00174 AU
	496 Jan 30 j 05:07	0° $\text{♁}$		direct	502 Feb 19 j 09:31	21° $\text{♁}$ 20'41	
evening set	496 Mar 08 j 04:39	4° $\text{♁}$ 22'14		evening set	502 Jun 04 j 21:10	29° $\text{♁}$ 37'40	
					502 Jun 07 j 19:03	0° $\text{♁}$	
conjunction	496 Mar 25 j 14:27	6° $\text{♁}$ 35'35	-2°-17'-9				



conjunction	502 Jun 23 j 02:21	1° $\mathring{S}$ 59'00	0°-20'-17	conjunction	508 Sep 12 j 21:58	21° $\mathring{M}$ 41'49	2°10'50
minimum elong	502 Jun 23 j 02:22	1° $\mathring{S}$ 59'01	0°20'18	minimum elong	508 Sep 12 j 21:56	21° $\mathring{M}$ 41'48	2°10'50
max. Earth dist.	502 Jun 23 j 10:58	2° $\mathring{S}$ 01'48	10.02883 AU	max. Earth dist.	508 Sep 13 j 01:23	21° $\mathring{M}$ 42'51	10.69502 AU
morning rise	502 Jul 11 j 06:16	4° $\mathring{S}$ 19'53		morning rise	508 Sep 29 j 22:12	23° $\mathring{M}$ 45'09	
retrograde	502 Oct 23 j 02:08	12° $\mathring{S}$ 28'52			508 Dec 04 j 20:36	0° $\mathring{L}$	
opposition	502 Dec 28 j 14:27	9° $\mathring{S}$ 00'55	0°-4'-25	retrograde	509 Jan 07 j 11:31	0° $\mathring{L}$ 58'47	
min. Earth dist.	502 Dec 28 j 07:12	9° $\mathring{S}$ 02'25	8.06271 AU		509 Feb 10 j 17:34	30° $\mathring{R}$ $\mathring{M}$	
asc. node	503 Feb 06 j 14:22	6° $\mathring{S}$ 11'32		opposition	509 Mar 16 j 14:34	27° $\mathring{M}$ 39'44	2°45'38
direct	503 Mar 06 j 00:44	5° $\mathring{S}$ 30'55		min. Earth dist.	509 Mar 16 j 11:29	27° $\mathring{M}$ 40'19	8.75643 AU
evening set	503 Jun 19 j 22:44	13° $\mathring{S}$ 45'01		direct	509 May 26 j 06:13	24° $\mathring{M}$ 15'15	
					509 Aug 24 j 00:32	0° $\mathring{L}$	
conjunction	503 Jul 08 j 02:30	16° $\mathring{S}$ 04'43	0°13'24	evening set	509 Sep 08 j 07:56	1° $\mathring{L}$ 45'22	
minimum elong	503 Jul 08 j 02:29	16° $\mathring{S}$ 04'42	0°13'24				
behind sun begin	503 Jul 07 j 22:29	16° $\mathring{S}$ 03'26		conjunction	509 Sep 25 j 08:27	3° $\mathring{L}$ 47'25	2°17'28
behind sun end	503 Jul 08 j 06:29	16° $\mathring{S}$ 05'59		minimum elong	509 Sep 25 j 08:26	3° $\mathring{L}$ 47'25	2°17'28
max. Earth dist.	503 Jul 08 j 11:45	16° $\mathring{S}$ 07'41	10.10341 AU	max. Earth dist.	509 Sep 25 j 10:46	3° $\mathring{L}$ 48'07	10.81266 AU
morning rise	503 Jul 26 j 03:36	18° $\mathring{S}$ 23'32		morning rise	509 Oct 12 j 04:21	5° $\mathring{L}$ 48'08	
retrograde	503 Nov 06 j 00:05	26° $\mathring{S}$ 23'21		retrograde	510 Jan 19 j 12:19	12° $\mathring{L}$ 55'02	
opposition	504 Jan 11 j 13:19	22° $\mathring{S}$ 56'50	0°36'52	opposition	510 Mar 29 j 02:08	9° $\mathring{L}$ 37'01	2°49'42
min. Earth dist.	504 Jan 11 j 05:38	22° $\mathring{S}$ 58'24	8.14928 AU	min. Earth dist.	510 Mar 29 j 00:48	9° $\mathring{L}$ 37'16	8.86804 AU
direct	504 Mar 19 j 12:46	19° $\mathring{S}$ 27'07		direct	510 Jun 08 j 00:46	6° $\mathring{L}$ 13'50	
evening set	504 Jul 03 j 17:30	27° $\mathring{S}$ 36'24		evening set	510 Sep 20 j 13:15	13° $\mathring{L}$ 36'00	
conjunction	504 Jul 21 j 18:12	29° $\mathring{S}$ 53'39	0°45'40	conjunction	510 Oct 07 j 09:57	15° $\mathring{L}$ 35'45	2°18'03
minimum elong	504 Jul 21 j 18:10	29° $\mathring{S}$ 53'39	0°45'40	minimum elong	510 Oct 07 j 09:58	15° $\mathring{L}$ 35'45	2°18'03
max. Earth dist.	504 Jul 22 j 03:37	29° $\mathring{S}$ 56'40	10.20090 AU	max. Earth dist.	510 Oct 07 j 10:19	15° $\mathring{L}$ 35'52	10.91650 AU
	504 Jul 22 j 14:03	0° $\mathring{L}$		morning rise	510 Oct 24 j 02:32	17° $\mathring{L}$ 34'21	
morning rise	504 Aug 08 j 15:08	2° $\mathring{L}$ 09'45		retrograde	511 Jan 31 j 08:08	24° $\mathring{L}$ 35'52	
retrograde	504 Nov 18 j 13:55	9° $\mathring{L}$ 59'42		opposition	511 Apr 10 j 09:23	21° $\mathring{L}$ 18'38	2°46'37
opposition	505 Jan 24 j 06:40	6° $\mathring{L}$ 34'46	1°15'06	min. Earth dist.	511 Apr 10 j 10:27	21° $\mathring{L}$ 18'26	8.96334 AU
min. Earth dist.	505 Jan 23 j 23:33	6° $\mathring{L}$ 36'12	8.25615 AU	direct	511 Jun 20 j 14:14	17° $\mathring{L}$ 56'41	
direct	505 Apr 02 j 19:45	3° $\mathring{L}$ 05'40		evening set	511 Oct 02 j 10:07	25° $\mathring{L}$ 11'40	
evening set	505 Jul 18 j 03:23	11° $\mathring{L}$ 08'33					
				conjunction	511 Oct 19 j 03:46	27° $\mathring{L}$ 09'37	2°12'57
conjunction	505 Aug 04 j 23:45	13° $\mathring{L}$ 22'51	1°14'44	minimum elong	511 Oct 19 j 03:47	27° $\mathring{L}$ 09'38	2°12'57
minimum elong	505 Aug 04 j 23:42	13° $\mathring{L}$ 22'50	1°14'44	max. Earth dist.	511 Oct 19 j 01:11	27° $\mathring{L}$ 08'52	11.00190 AU
max. Earth dist.	505 Aug 05 j 08:13	13° $\mathring{L}$ 25'31	10.31537 AU	morning rise	511 Nov 04 j 18:07	29° $\mathring{L}$ 06'38	
	505 Aug 17 j 20:30	15° $\mathring{L}$			511 Nov 12 j 12:46	0° $\mathring{M}$	
morning rise	505 Aug 22 j 15:40	15° $\mathring{L}$ 35'46		retrograde	512 Feb 12 j 00:49	6° $\mathring{M}$ 04'18	
retrograde	505 Dec 01 j 19:42	23° $\mathring{L}$ 15'45		opposition	512 Apr 21 j 12:57	2° $\mathring{M}$ 47'33	2°36'54
opposition	506 Feb 06 j 17:57	19° $\mathring{L}$ 52'27	1°48'12	min. Earth dist.	512 Apr 21 j 15:49	2° $\mathring{M}$ 47'01	9.03805 AU
min. Earth dist.	506 Feb 06 j 12:01	19° $\mathring{L}$ 53'38	8.37693 AU		512 Jun 05 j 05:16	30° $\mathring{R}$ $\mathring{L}$	
direct	506 Apr 16 j 20:18	16° $\mathring{L}$ 24'14		direct	512 Jul 01 j 21:06	29° $\mathring{L}$ 26'44	
evening set	506 Aug 01 j 03:06	24° $\mathring{L}$ 19'36			512 Jul 28 j 06:45	0° $\mathring{M}$	
				evening set	512 Oct 13 j 00:21	6° $\mathring{M}$ 35'39	
conjunction	506 Aug 18 j 18:18	26° $\mathring{L}$ 30'40	1°39'10				
minimum elong	506 Aug 18 j 18:15	26° $\mathring{L}$ 30'39	1°39'09	conjunction	512 Oct 29 j 15:55	8° $\mathring{M}$ 32'21	2°02'37
max. Earth dist.	506 Aug 19 j 01:00	26° $\mathring{L}$ 32'45	10.44021 AU	minimum elong	512 Oct 29 j 15:57	8° $\mathring{M}$ 32'21	2°02'37
morning rise	506 Sep 05 j 04:48	28° $\mathring{L}$ 40'15		max. Earth dist.	512 Oct 29 j 11:25	8° $\mathring{M}$ 31'01	11.06526 AU
	506 Sep 16 j 06:54	0° $\mathring{M}$		morning rise	512 Nov 15 j 04:54	10° $\mathring{M}$ 28'18	
retrograde	506 Dec 14 j 16:08	6° $\mathring{M}$ 10'37			512 Dec 29 j 16:46	15° $\mathring{M}$	
opposition	507 Feb 19 j 22:54	2° $\mathring{M}$ 48'54	2°14'47	retrograde	513 Feb 22 j 15:33	17° $\mathring{M}$ 23'43	
min. Earth dist.	507 Feb 19 j 18:15	2° $\mathring{M}$ 49'49	8.50490 AU		513 Apr 21 j 11:41	15° $\mathring{R}$ $\mathring{M}$	
	507 Apr 02 j 23:46	30° $\mathring{R}$ $\mathring{L}$		opposition	513 May 03 j 13:47	14° $\mathring{M}$ 07'11	2°21'13
direct	507 Apr 30 j 15:08	29° $\mathring{L}$ 21'48		min. Earth dist.	513 May 03 j 17:42	14° $\mathring{M}$ 06'27	9.08934 AU
	507 May 28 j 04:45	0° $\mathring{M}$		direct	513 Jul 13 j 23:35	10° $\mathring{M}$ 47'20	
evening set	507 Aug 14 j 15:44	7° $\mathring{M}$ 08'56			513 Sep 28 j 00:27	15° $\mathring{M}$	
				evening set	513 Oct 24 j 09:37	17° $\mathring{M}$ 51'28	
conjunction	507 Sep 01 j 01:37	9° $\mathring{M}$ 16'45	1°58'02				
minimum elong	507 Sep 01 j 01:34	9° $\mathring{M}$ 16'44	1°58'02	conjunction	513 Nov 09 j 23:59	19° $\mathring{M}$ 47'23	1°47'38
max. Earth dist.	507 Sep 01 j 06:20	9° $\mathring{M}$ 18'13	10.56888 AU	minimum elong	513 Nov 10 j 00:01	19° $\mathring{M}$ 47'24	1°47'37
morning rise	507 Sep 18 j 06:47	11° $\mathring{M}$ 23'06		max. Earth dist.	513 Nov 09 j 18:39	19° $\mathring{M}$ 45'49	11.10466 AU
retrograde	507 Dec 27 j 04:19	18° $\mathring{M}$ 44'35		morning rise	513 Nov 26 j 12:15	21° $\mathring{M}$ 42'46	
opposition	508 Mar 03 j 21:42	15° $\mathring{M}$ 24'18	2°34'01	retrograde	514 Mar 06 j 08:12	28° $\mathring{M}$ 37'32	
min. Earth dist.	508 Mar 03 j 17:44	15° $\mathring{M}$ 25'05	8.63351 AU	opposition	514 May 15 j 13:27	25° $\mathring{M}$ 20'56	2°00'18
direct	508 May 13 j 02:58	11° $\mathring{M}$ 58'29		min. Earth dist.	514 May 15 j 18:19	25° $\mathring{M}$ 20'02	9.11612 AU
evening set	508 Aug 26 j 17:02	19° $\mathring{M}$ 37'03		direct	514 Jul 25 j 21:36	22° $\mathring{M}$ 01'52	



evening set	514 Nov 04 j 15:35	29° $\mathbb{M}$ 02'26		opposition	520 Jul 25 j 15:23	3° $\approx$ 45'09	-1°-6'-48
	514 Nov 12 j 22:42	0° $\mathbb{X}$		min. Earth dist.	520 Jul 25 j 22:27	3° $\approx$ 43'49	8.78998 AU
				direct	520 Oct 02 j 18:19	0° $\approx$ 25'38	
conjunction	514 Nov 21 j 05:17	0° $\mathbb{X}$ 58'03	1°28'36	evening set	521 Jan 10 j 09:23	7° $\approx$ 36'36	
minimum elong	514 Nov 21 j 05:20	0° $\mathbb{X}$ 58'04	1°28'36				
max. Earth dist.	514 Nov 20 j 22:42	0° $\mathbb{X}$ 56'07	11.11940 AU	conjunction	521 Jan 27 j 04:46	9° $\approx$ 38'35	-1°-7'-11
morning rise	514 Dec 07 j 17:42	2° $\mathbb{X}$ 53'23		minimum elong	521 Jan 27 j 04:44	9° $\approx$ 38'34	1°07'13
retrograde	515 Mar 17 j 23:40	9° $\mathbb{X}$ 49'02		max. Earth dist.	521 Jan 26 j 20:43	9° $\approx$ 36'08	10.73325 AU
opposition	515 May 27 j 12:51	6° $\mathbb{X}$ 32'02	1°34'54	morning rise	521 Feb 13 j 03:53	11° $\approx$ 41'43	
min. Earth dist.	515 May 27 j 19:20	6° $\mathbb{X}$ 30'51	9.11813 AU		521 Mar 14 j 16:30	15° $\approx$	
direct	515 Aug 06 j 15:30	3° $\mathbb{X}$ 13'29		retrograde	521 May 28 j 19:25	19° $\approx$ 14'35	
evening set	515 Nov 15 j 20:11	10° $\mathbb{X}$ 11'56		opposition	521 Aug 07 j 09:45	15° $\approx$ 50'33	-1°-38'-11
				min. Earth dist.	521 Aug 07 j 15:53	15° $\approx$ 49'22	8.67361 AU
conjunction	515 Dec 02 j 09:42	12° $\mathbb{X}$ 07'40	1°06'14		521 Aug 18 j 12:53	15° $\mathbb{R}$ $\approx$	
minimum elong	515 Dec 02 j 09:44	12° $\mathbb{X}$ 07'40	1°06'14	direct	521 Oct 15 j 00:49	12° $\approx$ 30'15	
max. Earth dist.	515 Dec 02 j 01:21	12° $\mathbb{X}$ 05'13	11.10949 AU		521 Dec 08 j 15:39	15° $\approx$	
morning rise	515 Dec 18 j 23:02	14° $\mathbb{X}$ 03'22		evening set	522 Jan 22 j 17:11	19° $\approx$ 48'13	
retrograde	516 Mar 28 j 17:49	21° $\mathbb{X}$ 01'28					
opposition	516 Jun 07 j 12:38	17° $\mathbb{X}$ 43'48	1°05'53	conjunction	522 Feb 08 j 14:59	21° $\approx$ 52'27	-1°-31'-10
min. Earth dist.	516 Jun 07 j 20:13	17° $\mathbb{X}$ 42'24	9.09568 AU	minimum elong	522 Feb 08 j 14:56	21° $\approx$ 52'26	1°31'11
direct	516 Aug 17 j 10:21	14° $\mathbb{X}$ 25'29		max. Earth dist.	522 Feb 08 j 08:45	21° $\approx$ 50'31	10.61213 AU
evening set	516 Nov 26 j 00:53	21° $\mathbb{X}$ 23'17		morning rise	522 Feb 25 j 16:51	23° $\approx$ 57'59	
					522 Apr 26 j 13:24	0° $\mathbb{H}$	
conjunction	516 Dec 12 j 14:54	23° $\mathbb{X}$ 19'34	0°41'15	retrograde	522 Jun 11 j 05:21	1° $\mathbb{H}$ 41'11	
minimum elong	516 Dec 12 j 14:55	23° $\mathbb{X}$ 19'35	0°41'16		522 Jul 27 j 19:59	30° $\mathbb{R}$ $\approx$	
max. Earth dist.	516 Dec 12 j 06:05	23° $\mathbb{X}$ 16'59	11.07542 AU	opposition	522 Aug 20 j 10:21	28° $\approx$ 15'37	-2°-5'-55
morning rise	516 Dec 29 j 05:31	25° $\mathbb{X}$ 16'04		min. Earth dist.	522 Aug 20 j 14:43	28° $\approx$ 14'46	8.54968 AU
	517 Feb 14 j 03:13	0° $\mathbb{Z}$		direct	522 Oct 27 j 11:44	24° $\approx$ 54'23	
retrograde	517 Apr 09 j 15:32	2° $\mathbb{Z}$ 18'12			523 Jan 15 j 12:59	0° $\mathbb{H}$	
	517 Jun 05 j 16:43	30° $\mathbb{R}$ $\mathbb{X}$		evening set	523 Feb 04 j 10:53	2° $\mathbb{H}$ 20'33	
opposition	517 Jun 19 j 14:09	28° $\mathbb{X}$ 59'34	0°34'09				
min. Earth dist.	517 Jun 19 j 21:38	28° $\mathbb{X}$ 58'12	9.04958 AU	conjunction	523 Feb 21 j 11:30	4° $\mathbb{H}$ 27'15	-1°-51'-25
direct	517 Aug 29 j 03:53	25° $\mathbb{X}$ 41'18		minimum elong	523 Feb 21 j 11:27	4° $\mathbb{H}$ 27'14	1°51'26
	517 Nov 13 j 01:04	0° $\mathbb{Z}$		max. Earth dist.	523 Feb 21 j 06:49	4° $\mathbb{H}$ 25'47	10.48606 AU
evening set	517 Dec 07 j 07:32	2° $\mathbb{Z}$ 40'00		morning rise	523 Mar 10 j 16:32	6° $\mathbb{H}$ 35'24	
				retrograde	523 Jun 24 j 22:55	14° $\mathbb{H}$ 29'09	
conjunction	517 Dec 23 j 22:27	4° $\mathbb{Z}$ 37'11	0°14'30	opposition	523 Sep 02 j 17:34	11° $\mathbb{H}$ 02'10	-2°-28'-21
minimum elong	517 Dec 23 j 22:28	4° $\mathbb{Z}$ 37'11	0°14'30	min. Earth dist.	523 Sep 02 j 20:17	11° $\mathbb{H}$ 01'38	8.42377 AU
behind sun begin	517 Dec 23 j 19:12	4° $\mathbb{Z}$ 36'14		direct	523 Nov 09 j 05:31	7° $\mathbb{H}$ 39'53	
behind sun end	517 Dec 24 j 01:44	4° $\mathbb{Z}$ 38'08		evening set	524 Feb 17 j 15:30	15° $\mathbb{H}$ 15'06	
max. Earth dist.	517 Dec 23 j 14:18	4° $\mathbb{Z}$ 34'47	11.01832 AU				
morning rise	518 Jan 09 j 14:36	6° $\mathbb{Z}$ 34'49		conjunction	524 Mar 05 j 19:20	17° $\mathbb{H}$ 24'28	-2°-6'-37
retrograde	518 Apr 21 j 18:47	13° $\mathbb{Z}$ 42'37		minimum elong	524 Mar 05 j 19:18	17° $\mathbb{H}$ 24'27	2°06'37
opposition	518 Jul 01 j 18:28	10° $\mathbb{Z}$ 22'48	0°00'41	max. Earth dist.	524 Mar 05 j 15:45	17° $\mathbb{H}$ 23'20	10.36108 AU
min. Earth dist.	518 Jul 02 j 01:23	10° $\mathbb{Z}$ 21'31	8.98150 AU	morning rise	524 Mar 23 j 03:58	19° $\mathbb{H}$ 35'22	
desc. node	518 Jul 09 j 09:22	9° $\mathbb{Z}$ 49'05		retrograde	524 Jul 08 j 00:18	27° $\mathbb{H}$ 39'16	
direct	518 Sep 09 j 22:26	7° $\mathbb{Z}$ 04'21		opposition	524 Sep 15 j 07:23	24° $\mathbb{H}$ 11'02	-2°-43'-48
evening set	518 Dec 18 j 18:07	14° $\mathbb{Z}$ 05'32		min. Earth dist.	524 Sep 15 j 08:48	24° $\mathbb{H}$ 10'45	8.30220 AU
				direct	524 Nov 21 j 07:54	20° $\mathbb{H}$ 47'36	
conjunction	519 Jan 04 j 10:10	16° $\mathbb{Z}$ 04'00	0°-13'-14	evening set	525 Mar 02 j 07:13	28° $\mathbb{H}$ 32'16	
minimum elong	519 Jan 04 j 10:10	16° $\mathbb{Z}$ 04'00	0°13'15		525 Mar 13 j 20:06	0° $\mathbb{Y}$	
behind sun begin	519 Jan 04 j 05:58	16° $\mathbb{Z}$ 02'46					
behind sun end	519 Jan 04 j 14:21	16° $\mathbb{Z}$ 05'14		conjunction	525 Mar 19 j 14:52	0° $\mathbb{Y}$ 44'24	-2°-15'-29
max. Earth dist.	519 Jan 04 j 01:42	16° $\mathbb{Z}$ 01'29	10.94029 AU	minimum elong	525 Mar 19 j 14:51	0° $\mathbb{Y}$ 44'24	2°15'30
morning rise	519 Jan 21 j 04:19	18° $\mathbb{Z}$ 03'09		max. Earth dist.	525 Mar 19 j 12:54	0° $\mathbb{Y}$ 43'46	10.24389 AU
retrograde	519 May 04 j 05:08	25° $\mathbb{Z}$ 18'01		morning rise	525 Apr 06 j 03:27	2° $\mathbb{Y}$ 58'07	
opposition	519 Jul 14 j 02:33	21° $\mathbb{Z}$ 56'55	0°-33'-22	retrograde	525 Jul 22 j 09:11	11° $\mathbb{Y}$ 11'02	
min. Earth dist.	519 Jul 14 j 09:34	21° $\mathbb{Z}$ 55'36	8.89393 AU	opposition	525 Sep 29 j 03:38	7° $\mathbb{Y}$ 41'48	-2°-50'-43
direct	519 Sep 21 j 18:17	18° $\mathbb{Z}$ 38'02		min. Earth dist.	525 Sep 29 j 03:50	7° $\mathbb{Y}$ 41'45	8.19176 AU
evening set	519 Dec 30 j 10:14	25° $\mathbb{Z}$ 43'19		direct	525 Dec 04 j 18:26	4° $\mathbb{Y}$ 17'10	
				evening set	526 Mar 16 j 09:46	12° $\mathbb{Y}$ 11'03	
conjunction	520 Jan 16 j 03:43	27° $\mathbb{Z}$ 43'23	0°-40'-48				
minimum elong	520 Jan 16 j 03:42	27° $\mathbb{Z}$ 43'22	0°40'50	conjunction	526 Apr 02 j 21:51	14° $\mathbb{Y}$ 25'59	-2°-17'-1
max. Earth dist.	520 Jan 15 j 18:48	27° $\mathbb{Z}$ 40'42	10.84412 AU	minimum elong	526 Apr 02 j 21:52	14° $\mathbb{Y}$ 25'59	2°17'01
morning rise	520 Feb 02 j 00:18	29° $\mathbb{Z}$ 44'24		max. Earth dist.	526 Apr 02 j 22:23	14° $\mathbb{Y}$ 26'09	10.14127 AU
	520 Feb 04 j 05:23	0° $\approx$		morning rise	526 Apr 20 j 14:37	16° $\mathbb{Y}$ 42'24	
retrograde	520 May 15 j 19:50	7° $\approx$ 07'41		retrograde	526 Aug 05 j 23:44	25° $\mathbb{Y}$ 02'24	



opposition	526 Oct 13 j 05:18	21° $\Upsilon$ 32'29	-2°-48'00	morning rise	532 Jul 18 j 23:18	12° $\Theta$ 25'38	
min. Earth dist.	526 Oct 13 j 03:49	21° $\Upsilon$ 32'47	8.09895 AU	retrograde	532 Oct 30 j 07:53	20° $\Theta$ 29'39	
direct	526 Dec 18 j 13:44	18° $\Upsilon$ 06'42		opposition	533 Jan 04 j 19:17	17° $\Theta$ 03'03	0°18'52
evening set	527 Mar 30 j 22:36	26° $\Upsilon$ 08'59		min. Earth dist.	533 Jan 04 j 13:17	17° $\Theta$ 04'17	8.11685 AU
				direct	533 Mar 13 j 11:53	13° $\Theta$ 33'40	
conjunction	527 Apr 17 j 15:25	28° $\Upsilon$ 26'30	-2°-10'-35	evening set	533 Jun 27 j 14:51	21° $\Theta$ 45'23	
minimum elong	527 Apr 17 j 15:27	28° $\Upsilon$ 26'31	2°10'35				
max. Earth dist.	527 Apr 17 j 18:40	28° $\Upsilon$ 27'34	10.05948 AU	conjunction	533 Jul 15 j 16:56	24° $\Theta$ 03'45	0°31'43
	527 Apr 29 j 15:03	0° $\mathcal{B}$		minimum elong	533 Jul 15 j 16:54	24° $\Theta$ 03'45	0°31'42
morning rise	527 May 05 j 12:13	0° $\mathcal{B}$ 45'20		max. Earth dist.	533 Jul 16 j 00:16	24° $\Theta$ 06'06	10.16197 AU
retrograde	527 Aug 20 j 17:11	9° $\mathcal{B}$ 09'47		morning rise	533 Aug 02 j 16:01	26° $\Theta$ 21'08	
opposition	527 Oct 27 j 11:00	5° $\mathcal{B}$ 39'32	-2°-35'-10		533 Sep 02 j 15:39	0° $\mathcal{Q}$	
min. Earth dist.	527 Oct 27 j 07:36	5° $\mathcal{B}$ 40'14	8.02959 AU	retrograde	533 Nov 13 j 00:50	4° $\mathcal{Q}$ 15'44	
direct	528 Jan 01 j 17:02	2° $\mathcal{B}$ 12'42		opposition	534 Jan 18 j 15:27	0° $\mathcal{Q}$ 50'34	0°58'45
evening set	528 Apr 13 j 19:52	10° $\mathcal{B}$ 21'54		min. Earth dist.	534 Jan 18 j 09:32	0° $\mathcal{Q}$ 51'46	8.21136 AU
					534 Jan 29 j 03:01	30° $\mathcal{R}\Theta$	
conjunction	528 May 01 j 17:15	12° $\mathcal{B}$ 41'37	-1°-56'-9	direct	534 Mar 27 j 22:14	27° $\Theta$ 21'32	
minimum elong	528 May 01 j 17:19	12° $\mathcal{B}$ 41'38	1°56'10		534 May 23 j 07:09	0° $\mathcal{Q}$	
max. Earth dist.	528 May 01 j 23:15	12° $\mathcal{B}$ 43'34	10.00384 AU	evening set	534 Jul 12 j 05:30	5° $\mathcal{Q}$ 27'45	
morning rise	528 May 19 j 17:39	15° $\mathcal{B}$ 02'18					
	528 May 19 j 10:28	15° $\mathcal{B}$		conjunction	534 Jul 30 j 03:51	7° $\mathcal{Q}$ 43'26	1°02'26
retrograde	528 Sep 03 j 12:13	23° $\mathcal{B}$ 28'09		minimum elong	534 Jul 30 j 03:48	7° $\mathcal{Q}$ 43'25	1°02'25
opposition	528 Nov 09 j 19:25	19° $\mathcal{B}$ 57'57	-2°-12'-33	max. Earth dist.	534 Jul 30 j 10:35	7° $\mathcal{Q}$ 45'34	10.26537 AU
min. Earth dist.	528 Nov 09 j 14:01	19° $\mathcal{B}$ 59'04	7.98822 AU	morning rise	534 Aug 16 j 22:16	9° $\mathcal{Q}$ 57'51	
direct	529 Jan 15 j 01:36	16° $\mathcal{B}$ 30'10			534 Oct 01 j 11:52	15° $\mathcal{Q}$	
evening set	529 Apr 28 j 23:03	24° $\mathcal{B}$ 44'17		retrograde	534 Nov 26 j 10:29	17° $\mathcal{Q}$ 42'38	
					535 Jan 23 j 15:45	15° $\mathcal{R}\mathcal{Q}$	
conjunction	529 May 17 j 00:23	27° $\mathcal{B}$ 05'31	-1°-34'-25	opposition	535 Feb 01 j 05:55	14° $\mathcal{Q}$ 18'54	1°34'23
minimum elong	529 May 17 j 00:27	27° $\mathcal{B}$ 05'32	1°34'25	min. Earth dist.	535 Feb 01 j 00:01	14° $\mathcal{Q}$ 20'05	8.32240 AU
max. Earth dist.	529 May 17 j 08:31	27° $\mathcal{B}$ 08'11	9.97792 AU	direct	535 Apr 11 j 02:31	10° $\mathcal{Q}$ 50'31	
morning rise	529 Jun 04 j 03:32	29° $\mathcal{B}$ 27'21			535 Jun 22 j 23:04	15° $\mathcal{Q}$	
	529 Jun 08 j 09:47	0° $\mathcal{I}$		evening set	535 Jul 26 j 10:15	18° $\mathcal{Q}$ 49'44	
retrograde	529 Sep 18 j 06:28	7° $\mathcal{I}$ 51'25					
opposition	529 Nov 24 j 04:35	4° $\mathcal{I}$ 21'36	-1°-41'-28	conjunction	535 Aug 13 j 03:54	21° $\mathcal{Q}$ 02'20	1°29'05
min. Earth dist.	529 Nov 23 j 21:57	4° $\mathcal{I}$ 22'59	7.97730 AU	minimum elong	535 Aug 13 j 03:50	21° $\mathcal{Q}$ 02'19	1°29'04
direct	530 Jan 29 j 14:11	0° $\mathcal{I}$ 53'01		max. Earth dist.	535 Aug 13 j 10:18	21° $\mathcal{Q}$ 04'21	10.38212 AU
evening set	530 May 14 j 05:42	9° $\mathcal{I}$ 09'46		morning rise	535 Aug 30 j 16:53	23° $\mathcal{Q}$ 13'30	
					535 Nov 09 j 12:46	0° $\mathcal{P}$	
conjunction	530 Jun 01 j 09:45	11° $\mathcal{I}$ 31'40	-1°-6'-44	retrograde	535 Dec 09 j 12:05	0° $\mathcal{P}$ 48'33	
minimum elong	530 Jun 01 j 09:48	11° $\mathcal{I}$ 31'41	1°06'45		536 Jan 08 j 19:19	30° $\mathcal{R}\mathcal{Q}$	
max. Earth dist.	530 Jun 01 j 18:45	11° $\mathcal{I}$ 34'37	9.98283 AU	opposition	536 Feb 14 j 14:07	27° $\mathcal{Q}$ 26'13	2°04'01
morning rise	530 Jun 19 j 14:20	13° $\mathcal{I}$ 53'45		min. Earth dist.	536 Feb 14 j 08:47	27° $\mathcal{Q}$ 27'17	8.44379 AU
retrograde	530 Oct 02 j 21:24	22° $\mathcal{I}$ 13'04		direct	536 Apr 24 j 00:11	23° $\mathcal{Q}$ 58'41	
opposition	530 Dec 08 j 12:31	18° $\mathcal{I}$ 44'02	-1°-4'-4		536 Jul 23 j 16:07	0° $\mathcal{P}$	
min. Earth dist.	530 Dec 08 j 05:44	18° $\mathcal{I}$ 45'26	7.99669 AU	evening set	536 Aug 08 j 04:12	1° $\mathcal{P}$ 49'57	
direct	531 Feb 13 j 05:01	15° $\mathcal{I}$ 14'51					
evening set	531 May 29 j 12:31	23° $\mathcal{I}$ 32'00		conjunction	536 Aug 25 j 16:41	3° $\mathcal{P}$ 59'20	1°50'31
				minimum elong	536 Aug 25 j 16:38	3° $\mathcal{P}$ 59'19	1°50'30
conjunction	531 Jun 16 j 17:39	25° $\mathcal{I}$ 53'38	0°-35'-1	max. Earth dist.	536 Aug 25 j 22:18	4° $\mathcal{P}$ 01'04	10.50588 AU
minimum elong	531 Jun 16 j 17:41	25° $\mathcal{I}$ 53'38	0°35'02	morning rise	536 Sep 12 j 00:08	6° $\mathcal{P}$ 07'12	
max. Earth dist.	531 Jun 17 j 02:26	25° $\mathcal{I}$ 56'29	10.01700 AU	retrograde	536 Dec 21 j 04:22	13° $\mathcal{P}$ 33'01	
morning rise	531 Jul 04 j 22:02	28° $\mathcal{I}$ 15'00		opposition	537 Feb 26 j 15:53	10° $\mathcal{P}$ 12'01	2°26'36
	531 Jul 18 j 22:32	0° $\Theta$		min. Earth dist.	537 Feb 26 j 12:00	10° $\mathcal{P}$ 12'46	8.56906 AU
retrograde	531 Oct 17 j 06:56	6° $\Theta$ 27'24		direct	537 May 07 j 15:08	6° $\mathcal{P}$ 45'28	
opposition	531 Dec 22 j 17:54	2° $\Theta$ 59'28	0°-22'-59	evening set	537 Aug 21 j 10:58	14° $\mathcal{P}$ 28'18	
min. Earth dist.	531 Dec 22 j 11:30	3° $\Theta$ 00'47	8.04410 AU				
	532 Feb 04 j 12:14	30° $\mathcal{R}\mathcal{I}$		conjunction	537 Sep 07 j 18:14	16° $\mathcal{P}$ 34'32	2°06'03
direct	532 Feb 27 j 21:18	29° $\mathcal{I}$ 30'02		minimum elong	537 Sep 07 j 18:11	16° $\mathcal{P}$ 34'31	2°06'03
	532 Mar 22 j 06:58	0° $\Theta$		max. Earth dist.	537 Sep 07 j 22:09	16° $\mathcal{P}$ 35'44	10.63029 AU
evening set	532 Jun 12 j 16:22	7° $\Theta$ 45'27		morning rise	537 Sep 24 j 20:33	18° $\mathcal{P}$ 39'17	
				retrograde	538 Jan 02 j 13:55	25° $\mathcal{P}$ 56'42	
conjunction	532 Jun 30 j 20:47	10° $\Theta$ 05'52	0°-1'-29	opposition	538 Mar 11 j 11:37	22° $\mathcal{P}$ 36'53	2°41'36
minimum elong	532 Jun 30 j 20:48	10° $\Theta$ 05'52	0°01'30	min. Earth dist.	538 Mar 11 j 09:32	22° $\mathcal{P}$ 37'17	8.69193 AU
behind sun begin	532 Jun 30 j 13:26	10° $\Theta$ 03'31		direct	538 May 20 j 22:00	19° $\mathcal{P}$ 11'28	
behind sun end	532 Jul 01 j 04:10	10° $\Theta$ 08'14		evening set	538 Sep 03 j 06:40	26° $\mathcal{P}$ 45'46	
max. Earth dist.	532 Jul 01 j 04:57	10° $\Theta$ 08'29	10.07771 AU				
asc. node	532 Jul 17 j 06:22	12° $\Theta$ 12'38		conjunction	538 Sep 20 j 09:03	28° $\mathcal{P}$ 49'06	2°15'23



minimum elong	538 Sep 20 j 09:01	28° <del>49</del> '06	2°15'24	conjunction	544 Nov 26 j 21:12	7° <del>28</del> '22	1°16'29
max. Earth dist.	538 Sep 20 j 10:35	28° <del>49</del> '34	10.74940 AU	minimum elong	544 Nov 26 j 21:15	7° <del>28</del> '23	1°16'29
	538 Sep 30 j 03:49	0° <del>51</del> '		max. Earth dist.	544 Nov 26 j 15:46	7° <del>26</del> '46	11.12192 AU
morning rise	538 Oct 07 j 06:55	0° <del>51</del> '05		morning rise	544 Dec 13 j 10:00	9° <del>23</del> '44	
retrograde	539 Jan 14 j 15:50	8° <del>42</del> '12		retrograde	545 Mar 23 j 22:10	16° <del>19</del> '57	
opposition	539 Mar 24 j 01:41	4° <del>42</del> '22	2°48'58	opposition	545 Jun 02 j 14:44	13° <del>02</del> '32	1°19'06
min. Earth dist.	539 Mar 24 j 00:41	4° <del>42</del> '34	8.80676 AU	min. Earth dist.	545 Jun 02 j 19:36	13° <del>01</del> '38	9.11705 AU
direct	539 Jun 02 j 21:20	1° <del>48</del> '08		direct	545 Aug 12 j 16:31	9° <del>44</del> '10	
evening set	539 Sep 15 j 16:06	8° <del>44</del> '12		evening set	545 Nov 21 j 11:33	16° <del>41</del> '26	
conjunction	539 Oct 02 j 14:23	10° <del>45</del> '03	2°18'36	conjunction	545 Dec 08 j 01:19	18° <del>37</del> '16	0°52'36
minimum elong	539 Oct 02 j 14:23	10° <del>45</del> '03	2°18'36	minimum elong	545 Dec 08 j 01:21	18° <del>37</del> '16	0°52'36
max. Earth dist.	539 Oct 02 j 14:27	10° <del>45</del> '04	10.85814 AU	max. Earth dist.	545 Dec 07 j 19:00	18° <del>35</del> '25	11.10529 AU
morning rise	539 Oct 19 j 08:34	12° <del>44</del> '41		morning rise	545 Dec 24 j 15:06	20° <del>33</del> '10	
retrograde	540 Jan 26 j 13:25	19° <del>48</del> '48		retrograde	546 Apr 04 j 17:51	27° <del>32</del> '30	
opposition	540 Apr 04 j 10:40	16° <del>30</del> '44	2°48'57	opposition	546 Jun 14 j 14:57	24° <del>14</del> '30	0°48'30
min. Earth dist.	540 Apr 04 j 10:21	16° <del>30</del> '48	8.90877 AU	min. Earth dist.	546 Jun 14 j 20:46	24° <del>13</del> '26	9.08812 AU
direct	540 Jun 14 j 14:58	13° <del>07</del> '43		direct	546 Aug 24 j 07:39	20° <del>56</del> '30	
evening set	540 Sep 26 j 16:24	20° <del>26</del> '08		evening set	546 Dec 02 j 16:38	27° <del>53</del> '48	
conjunction	540 Oct 13 j 11:31	22° <del>24</del> '59	2°15'55	conjunction	546 Dec 19 j 06:54	29° <del>50</del> '17	0°26'33
minimum elong	540 Oct 13 j 11:32	22° <del>24</del> '59	2°15'56	minimum elong	546 Dec 19 j 06:55	29° <del>50</del> '18	0°26'34
max. Earth dist.	540 Oct 13 j 10:51	22° <del>24</del> '47	10.95212 AU	max. Earth dist.	546 Dec 18 j 23:16	29° <del>48</del> '03	11.06500 AU
morning rise	540 Oct 30 j 02:50	24° <del>22</del> '45			546 Dec 20 j 15:52	0° <del>50</del> '	
	540 Dec 27 j 15:40	0° <del>50</del> '		morning rise	547 Jan 04 j 22:17	1° <del>47</del> '08	
retrograde	541 Feb 06 j 08:34	1° <del>22</del> '14		retrograde	547 Apr 16 j 17:04	8° <del>51</del> '14	
	541 Mar 20 j 04:12	30° <del>42</del> '		opposition	547 Jun 26 j 17:24	5° <del>32</del> '23	0°15'44
opposition	541 Apr 16 j 15:36	28° <del>04</del> '45	2°42'03	min. Earth dist.	547 Jun 27 j 00:07	5° <del>31</del> '08	9.03616 AU
min. Earth dist.	541 Apr 16 j 16:25	28° <del>04</del> '36	8.99393 AU	direct	547 Sep 05 j 01:33	2° <del>14</del> '28	
direct	541 Jun 26 j 23:36	24° <del>42</del> '56		evening set	547 Dec 14 j 00:45	9° <del>13</del> '23	
	541 Sep 21 j 07:12	0° <del>54</del> '		desc. node	547 Dec 19 j 21:22	9° <del>54</del> '26	
evening set	541 Oct 08 j 09:19	1° <del>54</del> '38		conjunction	547 Dec 30 j 16:03	11° <del>10</del> '56	0°00'-48
conjunction	541 Oct 25 j 01:56	3° <del>51</del> '56	2°07'49	minimum elong	547 Dec 30 j 16:03	11° <del>10</del> '56	0°00'49
minimum elong	541 Oct 25 j 01:57	3° <del>51</del> '56	2°07'48	behind sun begin	547 Dec 30 j 09:04	11° <del>08</del> '54	
max. Earth dist.	541 Oct 24 j 23:56	3° <del>51</del> '20	11.02771 AU	behind sun end	547 Dec 30 j 23:01	11° <del>12</del> '59	
morning rise	541 Nov 10 j 15:21	5° <del>48</del> '22		max. Earth dist.	547 Dec 30 j 08:20	11° <del>08</del> '40	11.00229 AU
retrograde	542 Feb 17 j 23:22	12° <del>44</del> '40		morning rise	548 Jan 16 j 09:15	13° <del>09</del> '04	
opposition	542 Apr 28 j 17:27	9° <del>27</del> '35	2°28'53	retrograde	548 Apr 27 j 23:08	20° <del>19</del> '24	
min. Earth dist.	542 Apr 28 j 20:09	9° <del>27</del> '05	9.05920 AU	opposition	548 Jul 07 j 22:48	16° <del>59</del> '29	0°-18'-5
direct	542 Jul 09 j 02:25	6° <del>06</del> '51		min. Earth dist.	548 Jul 08 j 05:16	16° <del>58</del> '17	8.96280 AU
evening set	542 Oct 19 j 20:24	13° <del>12</del> '57		direct	548 Sep 15 j 21:00	13° <del>41</del> '25	
	542 Nov 04 j 03:54	15° <del>50</del> '		evening set	548 Dec 24 j 13:29	20° <del>43</del> '31	
conjunction	542 Nov 05 j 11:12	15° <del>09</del> '11	1°54'47	conjunction	549 Jan 10 j 06:13	22° <del>42</del> '29	0°-28'-28
minimum elong	542 Nov 05 j 11:14	15° <del>09</del> '12	1°54'47	minimum elong	549 Jan 10 j 06:12	22° <del>42</del> '28	0°28'30
max. Earth dist.	542 Nov 05 j 07:04	15° <del>07</del> '58	11.08238 AU	max. Earth dist.	549 Jan 09 j 23:10	22° <del>40</del> '22	10.91910 AU
morning rise	542 Nov 21 j 23:45	17° <del>04</del> '48		morning rise	549 Jan 27 j 01:24	24° <del>42</del> '14	
retrograde	543 Mar 01 j 13:48	23° <del>59</del> '29			549 Mar 20 j 20:47	0° <del>50</del> '	
opposition	543 May 10 j 17:18	20° <del>42</del> '32	2°10'09	retrograde	549 May 10 j 11:09	2° <del>00</del> '13	
min. Earth dist.	543 May 10 j 21:23	20° <del>41</del> '47	9.10239 AU		549 Jul 01 j 19:08	30° <del>00</del> '	
direct	543 Jul 21 j 02:34	17° <del>22</del> '46		opposition	549 Jul 20 j 08:34	28° <del>39</del> '02	0°-51'-51
evening set	543 Oct 31 j 03:07	24° <del>24</del> '30		min. Earth dist.	549 Jul 20 j 14:21	28° <del>37</del> '57	8.87035 AU
				direct	549 Sep 27 j 18:21	25° <del>20</del> '34	
conjunction	543 Nov 16 j 16:59	26° <del>20</del> '10	1°37'28		549 Dec 14 j 14:54	0° <del>50</del> '	
minimum elong	543 Nov 16 j 17:01	26° <del>20</del> '11	1°37'27	evening set	550 Jan 05 j 08:28	2° <del>27</del> '24	
max. Earth dist.	543 Nov 16 j 11:35	26° <del>18</del> '36	11.11420 AU	conjunction	550 Jan 22 j 02:49	4° <del>28</del> '04	0°-55'-27
morning rise	543 Dec 03 j 05:26	28° <del>15</del> '27		minimum elong	550 Jan 22 j 02:47	4° <del>28</del> '04	0°55'28
	543 Dec 18 j 21:01	0° <del>50</del> '		max. Earth dist.	550 Jan 21 j 19:50	4° <del>25</del> '58	10.81808 AU
retrograde	544 Mar 12 j 04:15	5° <del>10</del> '06		morning rise	550 Feb 08 j 00:23	6° <del>29</del> '46	
opposition	544 May 21 j 16:00	1° <del>53</del> '01	1°46'37	retrograde	550 May 23 j 07:30	13° <del>56</del> '38	
min. Earth dist.	544 May 21 j 20:27	1° <del>52</del> '13	9.12191 AU	opposition	550 Aug 01 j 23:30	10° <del>34</del> '03	-1°-24'-11
	544 Jun 17 j 23:36	30° <del>34</del> '04		min. Earth dist.	550 Aug 02 j 04:59	10° <del>33</del> '00	8.76176 AU
direct	544 Jul 31 j 22:33	28° <del>34</del> '04		direct	550 Oct 09 j 20:20	7° <del>14</del> '55	
	544 Sep 12 j 15:56	0° <del>50</del> '		evening set	551 Jan 17 j 11:23	14° <del>27</del> '59	
evening set	544 Nov 10 j 07:34	5° <del>32</del> '50			551 Jan 21 j 21:52	15° <del>50</del> '	



conjunction	551 Feb 03 j 07:42	16°≈30'42	-1°-20'-35	conjunction	557 Apr 24 j 22:03	6°♄09'38	-2°-4'-2
minimum elong	551 Feb 03 j 07:40	16°≈30'41	1°20'35	minimum elong	557 Apr 24 j 22:06	6°♄09'39	2°04'03
max. Earth dist.	551 Feb 03 j 00:02	16°≈28'21	10.70255 AU	max. Earth dist.	557 Apr 25 j 00:24	6°♄10'24	10.03123 AU
morning rise	551 Feb 20 j 08:04	18°≈34'40		morning rise	557 May 12 j 20:45	8°♄29'22	
retrograde	551 Jun 05 j 11:31	26°≈11'23			557 Jul 12 j 03:20	15°♄	
opposition	551 Aug 14 j 20:07	22°≈47'19	-1°-53'-38	retrograde	557 Aug 27 j 20:49	16°♄54'23	
min. Earth dist.	551 Aug 15 j 01:54	22°≈46'13	8.64074 AU		557 Oct 14 j 05:14	15°♄	
direct	551 Oct 22 j 02:50	19°≈27'16		opposition	557 Nov 03 j 09:03	13°♄23'52	-2°-24'-34
evening set	552 Jan 29 j 23:28	26°≈48'03		min. Earth dist.	557 Nov 03 j 06:19	13°♄24'26	8.00519 AU
				direct	558 Jan 08 j 14:54	9°♄56'11	
conjunction	552 Feb 15 j 22:21	28°≈53'07	-1°-42'-37		558 Mar 27 j 12:58	15°♄	
minimum elong	552 Feb 15 j 22:19	28°≈53'06	1°42'37	evening set	558 Apr 22 j 02:50	18°♄07'46	
max. Earth dist.	552 Feb 15 j 15:13	28°≈50'54	10.57690 AU				
	552 Feb 24 j 22:47	0°♄		conjunction	558 May 10 j 02:13	20°♄28'18	-1°-45'-43
morning rise	552 Mar 04 j 01:47	0°♄59'35		minimum elong	558 May 10 j 02:16	20°♄28'20	1°45'44
retrograde	552 Jun 17 j 22:21	8°♄46'50		max. Earth dist.	558 May 10 j 06:26	20°♄29'41	9.98402 AU
opposition	552 Aug 26 j 23:14	5°♄21'16	-2°-18'-36	morning rise	558 May 28 j 04:19	22°♄49'41	
min. Earth dist.	552 Aug 27 j 04:22	5°♄20'16	8.51262 AU		558 Aug 05 j 10:16	0°♄	
direct	552 Nov 02 j 17:48	2°♄00'08		retrograde	558 Sep 11 j 14:54	1°♄14'46	
evening set	553 Feb 10 j 21:42	9°♄29'40			558 Oct 19 j 01:39	30°♄	
				opposition	558 Nov 17 j 17:31	27°♄44'20	-1°-57'-24
conjunction	553 Feb 27 j 23:44	11°♄37'21	-2°00'-14	min. Earth dist.	558 Nov 17 j 13:33	27°♄45'09	7.97286 AU
minimum elong	553 Feb 27 j 23:41	11°♄37'20	2°00'15	direct	559 Jan 23 j 01:48	24°♄15'37	
max. Earth dist.	553 Feb 27 j 18:26	11°♄35'41	10.44732 AU		559 Apr 16 j 23:31	0°♄	
morning rise	553 Mar 17 j 06:26	13°♄46'31		evening set	559 May 07 j 07:38	2°♄31'22	
retrograde	553 Jul 01 j 18:52	21°♄44'20					
opposition	553 Sep 09 j 09:02	18°♄17'17	-2°-37'-25	conjunction	559 May 25 j 10:28	4°♄53'06	-1°-20'-43
min. Earth dist.	553 Sep 09 j 12:31	18°♄16'36	8.38420 AU	minimum elong	559 May 25 j 10:31	4°♄53'07	1°20'43
direct	553 Nov 15 j 16:21	14°♄54'55		max. Earth dist.	559 May 25 j 16:38	4°♄55'08	9.96780 AU
evening set	554 Feb 24 j 07:04	22°♄33'48		morning rise	559 Jun 12 j 14:43	7°♄15'16	
				retrograde	559 Sep 26 j 06:50	15°♄37'23	
conjunction	554 Mar 13 j 12:48	24°♄44'17	-2°-12'-9	opposition	559 Dec 02 j 01:56	12°♄07'26	-1°-22'-45
minimum elong	554 Mar 13 j 12:47	24°♄44'16	2°12'10	min. Earth dist.	559 Dec 01 j 20:30	12°♄08'34	7.97219 AU
max. Earth dist.	554 Mar 13 j 09:46	24°♄43'19	10.32102 AU	direct	560 Feb 06 j 16:14	8°♄37'57	
morning rise	554 Mar 30 j 23:11	26°♄56'18		evening set	560 May 21 j 14:22	16°♄55'30	
	554 Apr 25 j 19:45	0°♄					
retrograde	554 Jul 16 j 00:05	5°♄03'53		conjunction	560 Jun 08 j 19:16	19°♄17'31	0°-50'-41
opposition	554 Sep 23 j 01:13	1°♄35'29	-2°-48'-30	minimum elong	560 Jun 08 j 19:18	19°♄17'32	0°50'42
min. Earth dist.	554 Sep 23 j 02:38	1°♄35'12	8.26262 AU	max. Earth dist.	560 Jun 09 j 03:11	19°♄20'07	9.98356 AU
	554 Oct 13 j 17:53	30°♄		morning rise	560 Jun 27 j 00:07	21°♄39'31	
direct	554 Nov 28 j 21:20	28°♄11'47		retrograde	560 Oct 09 j 18:38	29°♄55'59	
	555 Jan 12 j 18:09	0°♄		opposition	560 Dec 15 j 08:41	26°♄26'53	0°-43'-5
evening set	555 Mar 10 j 03:36	6°♄00'09		min. Earth dist.	560 Dec 15 j 02:00	26°♄28'16	8.00323 AU
				direct	561 Feb 20 j 08:10	22°♄56'57	
conjunction	555 Mar 27 j 13:29	8°♄13'29	-2°-17'-14		561 May 27 j 00:36	0°♄	
minimum elong	555 Mar 27 j 13:30	8°♄13'29	2°17'15	evening set	561 Jun 05 j 19:54	1°♄13'53	
max. Earth dist.	555 Mar 27 j 12:14	8°♄13'05	10.20516 AU				
morning rise	555 Apr 14 j 03:57	10°♄28'19		conjunction	561 Jun 24 j 01:08	3°♄35'12	0°-17'-43
retrograde	555 Jul 30 j 11:46	18°♄44'08		minimum elong	561 Jun 24 j 01:09	3°♄35'12	0°17'44
opposition	555 Oct 06 j 23:23	15°♄14'41	-2°-50'-28	max. Earth dist.	561 Jun 24 j 10:11	3°♄38'08	10.03014 AU
min. Earth dist.	555 Oct 06 j 23:08	15°♄14'44	8.15477 AU	morning rise	561 Jul 12 j 04:52	5°♄56'02	
direct	555 Dec 12 j 10:51	11°♄49'35		retrograde	561 Oct 23 j 23:54	14°♄04'46	
evening set	556 Mar 23 j 10:41	19°♄47'00		opposition	561 Dec 29 j 12:11	10°♄36'50	0°-1'-13
				min. Earth dist.	561 Dec 29 j 04:54	10°♄38'20	8.06377 AU
conjunction	556 Apr 10 j 01:02	22°♄03'04	-2°-14'-39	asc. node	562 Jan 09 j 14:04	9°♄42'37	
minimum elong	556 Apr 10 j 01:04	22°♄03'05	2°14'39	direct	562 Mar 06 j 22:52	7°♄06'48	
max. Earth dist.	556 Apr 10 j 01:32	22°♄03'14	10.10652 AU	evening set	562 Jun 20 j 21:29	15°♄20'54	
morning rise	556 Apr 27 j 19:41	24°♄20'33					
	556 Jun 17 j 10:25	0°♄		conjunction	562 Jul 09 j 01:10	17°♄40'32	0°15'56
retrograde	556 Aug 13 j 03:20	2°♄42'22		minimum elong	562 Jul 09 j 01:09	17°♄40'32	0°15'56
	556 Oct 10 j 07:09	30°♄		max. Earth dist.	562 Jul 09 j 10:31	17°♄43'32	10.10425 AU
opposition	556 Oct 20 j 02:27	29°♄12'11	-2°-42'-32	morning rise	562 Jul 27 j 02:03	19°♄59'18	
min. Earth dist.	556 Oct 20 j 00:53	29°♄12'30	8.06711 AU	retrograde	562 Nov 06 j 22:10	27°♄58'55	
direct	556 Dec 25 j 09:34	25°♄45'45		opposition	563 Jan 12 j 11:02	24°♄32'25	0°39'57
	557 Mar 05 j 21:48	0°♄		min. Earth dist.	563 Jan 12 j 03:59	24°♄33'51	8.14986 AU
evening set	557 Apr 07 j 03:03	3°♄51'05		direct	563 Mar 21 j 10:16	21°♄02'38	
				evening set	563 Jul 05 j 16:14	29°♄11'56	



	563 Jul 12 j 00:54	0°♈		conjunction	569 Oct 08 j 07:38	17°♊11'18	2°17'45
				minimum elong	569 Oct 08 j 07:38	17°♊11'18	2°17'45
conjunction	563 Jul 23 j 16:41	1°♈29'08	0°48'03	max. Earth dist.	569 Oct 08 j 07:29	17°♊11'16	10.91494 AU
minimum elong	563 Jul 23 j 16:39	1°♈29'08	0°48'03	morning rise	569 Oct 25 j 00:15	19°♊09'55	
max. Earth dist.	563 Jul 24 j 01:30	1°♈31'57	10.20119 AU	retrograde	570 Feb 01 j 05:54	26°♊11'36	
morning rise	563 Aug 10 j 13:25	3°♈45'09		opposition	570 Apr 11 j 07:44	22°♊54'22	2°45'55
retrograde	563 Nov 20 j 12:15	11°♈34'58		min. Earth dist.	570 Apr 11 j 08:39	22°♊54'12	8.96208 AU
opposition	564 Jan 26 j 04:30	8°♈10'02	1°17'54	direct	570 Jun 21 j 12:15	19°♊32'28	
min. Earth dist.	564 Jan 25 j 22:15	8°♈11'18	8.25622 AU	evening set	570 Oct 03 j 07:56	26°♊47'30	
direct	564 Apr 03 j 17:18	4°♈40'51					
evening set	564 Jul 19 j 01:53	12°♈43'47		conjunction	570 Oct 20 j 01:31	28°♊45'28	2°12'08
				minimum elong	570 Oct 20 j 01:32	28°♊45'28	2°12'08
conjunction	564 Aug 05 j 21:54	14°♈58'01	1°16'50	max. Earth dist.	570 Oct 19 j 23:15	28°♊44'48	11.00106 AU
minimum elong	564 Aug 05 j 21:51	14°♈58'00	1°16'49		570 Oct 30 j 14:09	0°♈	
max. Earth dist.	564 Aug 06 j 05:19	15°♈00'21	10.31511 AU	morning rise	570 Nov 05 j 15:52	0°♈42'29	
	564 Aug 06 j 04:12	15°♈		retrograde	571 Feb 12 j 22:14	7°♈40'18	
morning rise	564 Aug 23 j 13:40	17°♈10'53		opposition	571 Apr 23 j 11:25	4°♈23'32	2°35'37
retrograde	564 Dec 02 j 16:50	24°♈50'48		min. Earth dist.	571 Apr 23 j 13:17	4°♈23'11	9.03761 AU
opposition	565 Feb 07 j 15:47	21°♈27'29	1°50'35	direct	571 Jul 03 j 20:09	1°♈02'47	
min. Earth dist.	565 Feb 07 j 10:14	21°♈28'35	8.37650 AU	evening set	571 Oct 14 j 22:02	8°♈11'38	
direct	565 Apr 17 j 19:14	17°♈59'12					
evening set	565 Aug 02 j 01:21	25°♈54'38		conjunction	571 Oct 31 j 13:41	10°♈08'20	2°01'20
				minimum elong	571 Oct 31 j 13:43	10°♈08'20	2°01'20
conjunction	565 Aug 19 j 16:18	28°♈05'38	1°40'53	max. Earth dist.	571 Oct 31 j 10:24	10°♈07'22	11.06533 AU
minimum elong	565 Aug 19 j 16:15	28°♈05'37	1°40'52	morning rise	571 Nov 17 j 02:34	12°♈04'17	
max. Earth dist.	565 Aug 19 j 22:15	28°♈07'29	10.43948 AU		571 Dec 14 j 02:11	15°♈	
	565 Sep 04 j 01:01	0°♈		retrograde	572 Feb 24 j 15:36	18°♈59'47	
morning rise	565 Sep 06 j 02:39	0°♈15'11		opposition	572 May 04 j 12:24	15°♈43'15	2°19'24
retrograde	565 Dec 15 j 12:40	7°♈45'34		min. Earth dist.	572 May 04 j 15:40	15°♈42'39	9.08976 AU
opposition	566 Feb 20 j 20:39	4°♈23'49	2°16'38		572 May 14 j 08:57	15°♈	
min. Earth dist.	566 Feb 20 j 15:38	4°♈24'49	8.50396 AU	direct	572 Jul 14 j 22:09	12°♈23'29	
direct	566 May 01 j 14:27	0°♈56'42			572 Sep 11 j 13:26	15°♈	
evening set	566 Aug 15 j 13:48	8°♈43'54		evening set	572 Oct 25 j 07:13	19°♈27'27	
conjunction	566 Sep 01 j 23:33	10°♈51'41	1°59'17	conjunction	572 Nov 10 j 21:36	21°♈23'23	1°45'56
minimum elong	566 Sep 01 j 23:30	10°♈51'40	1°59'16	minimum elong	572 Nov 10 j 21:38	21°♈23'24	1°45'56
max. Earth dist.	566 Sep 02 j 04:27	10°♈53'11	10.56768 AU	max. Earth dist.	572 Nov 10 j 16:43	21°♈21'57	11.10541 AU
morning rise	566 Sep 19 j 04:29	12°♈57'58		morning rise	572 Nov 27 j 09:54	23°♈18'48	
retrograde	566 Dec 28 j 02:51	20°♈19'34			573 Feb 18 j 15:29	0°♈	
opposition	567 Mar 05 j 19:33	16°♈59'15	2°35'16	retrograde	573 Mar 07 j 05:42	0°♈13'35	
min. Earth dist.	567 Mar 05 j 15:06	17°♈00'07	8.63205 AU		573 Mar 23 j 23:19	30°♈	
direct	567 May 15 j 00:39	13°♈33'26		opposition	573 May 16 j 12:06	26°♈57'00	1°58'00
evening set	567 Aug 28 j 15:00	21°♈12'05		min. Earth dist.	573 May 16 j 17:14	26°♈56'03	9.11709 AU
				direct	573 Jul 26 j 18:19	23°♈38'00	
conjunction	567 Sep 14 j 19:48	23°♈16'50	2°11'35		573 Oct 30 j 21:44	0°♈	
minimum elong	567 Sep 14 j 19:47	23°♈16'49	2°11'35	evening set	573 Nov 05 j 13:13	0°♈38'27	
max. Earth dist.	567 Sep 15 j 00:01	23°♈18'07	10.69338 AU				
morning rise	567 Oct 01 j 19:44	25°♈20'08		conjunction	573 Nov 22 j 02:51	2°♈34'03	1°26'34
	567 Nov 14 j 20:30	0°♈		minimum elong	573 Nov 22 j 02:53	2°♈34'04	1°26'34
retrograde	568 Jan 09 j 09:41	2°♈33'55		max. Earth dist.	573 Nov 21 j 19:46	2°♈31'59	11.12056 AU
	568 Mar 07 j 15:04	30°♈		morning rise	573 Dec 08 j 15:27	4°♈29'24	
opposition	568 Mar 17 j 12:39	29°♈14'51	2°46'14	retrograde	574 Mar 18 j 21:33	11°♈25'06	
min. Earth dist.	568 Mar 17 j 09:43	29°♈15'25	8.75467 AU	opposition	574 May 28 j 11:26	8°♈08'08	1°32'14
direct	568 May 27 j 03:06	25°♈50'23		min. Earth dist.	574 May 28 j 18:03	8°♈06'56	9.11941 AU
	568 Aug 09 j 23:09	0°♈		direct	574 Aug 07 j 14:46	4°♈49'39	
evening set	568 Sep 09 j 05:48	3°♈20'36		evening set	574 Nov 16 j 17:43	11°♈47'58	
conjunction	568 Sep 26 j 06:09	5°♈22'38	2°17'41	conjunction	574 Dec 03 j 07:19	13°♈43'43	1°03'55
minimum elong	568 Sep 26 j 06:08	5°♈22'38	2°17'41	minimum elong	574 Dec 03 j 07:21	13°♈43'43	1°03'56
max. Earth dist.	568 Sep 26 j 08:37	5°♈23'23	10.81085 AU	max. Earth dist.	574 Dec 02 j 23:21	13°♈41'23	11.11089 AU
morning rise	568 Oct 13 j 01:55	7°♈23'22		morning rise	574 Dec 19 j 20:45	15°♈39'26	
retrograde	569 Jan 20 j 10:19	14°♈30'26		retrograde	575 Mar 30 j 16:01	22°♈37'36	
opposition	569 Mar 30 j 00:23	11°♈12'26	2°49'39	opposition	575 Jun 09 j 11:18	19°♈19'56	1°02'56
min. Earth dist.	569 Mar 29 j 23:33	11°♈12'36	8.86632 AU	min. Earth dist.	575 Jun 09 j 18:07	19°♈18'41	9.09710 AU
direct	569 Jun 08 j 23:15	7°♈49'17		direct	575 Aug 19 j 08:33	16°♈01'43	
evening set	569 Sep 21 j 11:07	15°♈11'32		evening set	575 Nov 27 j 22:22	22°♈59'22	



conjunction	575 Dec 14 j 12:33	24° <del>2</del> 55'39	0°38'46	retrograde	581 Jun 12 j 03:33	3° <del>1</del> 16'37	
minimum elong	575 Dec 14 j 12:34	24° <del>2</del> 55'39	0°38'46		581 Aug 19 j 10:05	30° <del>R</del>	
max. Earth dist.	575 Dec 14 j 04:45	24° <del>2</del> 53'22	11.07687 AU	opposition	581 Aug 21 j 08:29	29° <del>2</del> 51'01	-2°-7'-58
morning rise	575 Dec 31 j 03:10	26° <del>2</del> 52'09		min. Earth dist.	581 Aug 21 j 12:32	29° <del>2</del> 50'13	8.55091 AU
	576 Jan 29 j 03:34	0° <del>3</del>		direct	581 Oct 28 j 09:10	26° <del>2</del> 29'46	
retrograde	576 Apr 10 j 14:28	3° <del>3</del> 54'22			582 Jan 01 j 10:03	0° <del>1</del>	
opposition	576 Jun 20 j 12:48	0° <del>3</del> 35'44	0°31'02	evening set	582 Feb 05 j 08:47	3° <del>1</del> 55'49	
min. Earth dist.	576 Jun 20 j 19:29	0° <del>3</del> 34'31	9.05101 AU				
	576 Jun 28 j 15:58	30° <del>R</del> <del>2</del>		conjunction	582 Feb 22 j 09:20	6° <del>1</del> 02'29	-1°-52'-52
direct	576 Aug 30 j 02:25	27° <del>2</del> 17'33		minimum elong	582 Feb 22 j 09:17	6° <del>1</del> 02'28	1°52'52
	576 Oct 28 j 00:11	0° <del>3</del>		max. Earth dist.	582 Feb 22 j 03:57	6° <del>1</del> 00'48	10.48723 AU
evening set	576 Dec 08 j 05:12	4° <del>3</del> 16'06		morning rise	582 Mar 11 j 14:31	8° <del>1</del> 10'37	
				retrograde	582 Jun 25 j 21:02	16° <del>1</del> 04'16	
conjunction	576 Dec 24 j 20:09	6° <del>3</del> 13'17	0°11'56	opposition	582 Sep 03 j 15:33	12° <del>1</del> 37'15	-2°-29'-49
minimum elong	576 Dec 24 j 20:10	6° <del>3</del> 13'18	0°11'55	min. Earth dist.	582 Sep 03 j 18:41	12° <del>1</del> 36'38	8.42493 AU
behind sun begin	576 Dec 24 j 15:15	6° <del>3</del> 11'51		direct	582 Nov 10 j 03:13	9° <del>1</del> 14'54	
behind sun end	576 Dec 25 j 01:04	6° <del>3</del> 14'44		evening set	583 Feb 18 j 13:19	16° <del>1</del> 50'02	
max. Earth dist.	576 Dec 24 j 12:00	6° <del>3</del> 10'54	11.01974 AU				
morning rise	577 Jan 10 j 12:24	8° <del>3</del> 10'56		conjunction	583 Mar 07 j 17:11	18° <del>1</del> 59'22	-2°-7'-33
retrograde	577 Apr 22 j 18:20	15° <del>3</del> 18'44		minimum elong	583 Mar 07 j 17:09	18° <del>1</del> 59'22	2°07'33
desc. node	577 Jun 05 j 04:05	13° <del>3</del> 53'46		max. Earth dist.	583 Mar 07 j 13:00	18° <del>1</del> 58'03	10.36222 AU
opposition	577 Jul 02 j 17:05	11° <del>3</del> 58'58	0°-2'-28	morning rise	583 Mar 25 j 02:01	21° <del>1</del> 10'16	
min. Earth dist.	577 Jul 03 j 00:09	11° <del>3</del> 57'39	8.98288 AU	retrograde	583 Jul 09 j 22:14	29° <del>1</del> 14'01	
direct	577 Sep 10 j 20:09	8° <del>3</del> 40'33		opposition	583 Sep 17 j 05:05	25° <del>1</del> 45'45	-2°-44'-35
evening set	577 Dec 19 j 15:53	15° <del>3</del> 41'36		min. Earth dist.	583 Sep 17 j 07:14	25° <del>1</del> 45'20	8.30327 AU
				direct	583 Nov 23 j 05:26	22° <del>1</del> 22'14	
conjunction	578 Jan 05 j 07:53	17° <del>3</del> 40'03	0°-15'-47		584 Mar 02 j 07:07	0° <del>1</del>	
minimum elong	578 Jan 05 j 07:52	17° <del>3</del> 40'02	0°15'49	evening set	584 Mar 03 j 04:58	0° <del>1</del> 06'50	
behind sun begin	578 Jan 05 j 06:13	17° <del>3</del> 39'33					
behind sun end	578 Jan 05 j 09:32	17° <del>3</del> 40'32		conjunction	584 Mar 20 j 12:48	2° <del>1</del> 18'58	-2°-15'-51
max. Earth dist.	578 Jan 04 j 22:53	17° <del>3</del> 37'22	10.94169 AU	minimum elong	584 Mar 20 j 12:48	2° <del>1</del> 18'58	2°15'51
morning rise	578 Jan 22 j 02:14	19° <del>3</del> 39'13		max. Earth dist.	584 Mar 20 j 10:54	2° <del>1</del> 18'22	10.24486 AU
retrograde	578 May 05 j 01:57	26° <del>3</del> 54'06		morning rise	584 Apr 07 j 01:31	4° <del>1</del> 32'41	
opposition	578 Jul 15 j 01:13	23° <del>3</del> 32'59	0°-36'-27	retrograde	584 Jul 23 j 06:12	12° <del>1</del> 45'24	
min. Earth dist.	578 Jul 15 j 08:38	23° <del>3</del> 31'36	8.89531 AU	opposition	584 Sep 30 j 01:01	9° <del>1</del> 16'08	-2°-50'-47
direct	578 Sep 22 j 16:00	20° <del>3</del> 14'07		min. Earth dist.	584 Sep 30 j 01:29	9° <del>1</del> 16'03	8.19259 AU
evening set	578 Dec 31 j 07:55	27° <del>3</del> 19'17		direct	584 Dec 05 j 16:44	5° <del>1</del> 51'28	
				evening set	585 Mar 17 j 07:23	13° <del>1</del> 45'16	
conjunction	579 Jan 17 j 01:29	29° <del>3</del> 19'20	0°-43'-14				
minimum elong	579 Jan 17 j 01:28	29° <del>3</del> 19'19	0°43'16	conjunction	585 Apr 03 j 19:43	16° <del>1</del> 00'13	-2°-16'-46
max. Earth dist.	579 Jan 16 j 16:56	29° <del>3</del> 16'45	10.84550 AU	minimum elong	585 Apr 03 j 19:44	16° <del>1</del> 00'14	2°16'47
	579 Jan 22 j 16:37	0° <del>2</del>		max. Earth dist.	585 Apr 03 j 20:45	16° <del>1</del> 00'33	10.14193 AU
morning rise	579 Feb 02 j 22:09	1° <del>2</del> 20'20		morning rise	585 Apr 21 j 12:30	18° <del>1</del> 16'38	
retrograde	579 May 17 j 18:04	8° <del>2</del> 43'39		retrograde	585 Aug 06 j 20:00	26° <del>1</del> 36'28	
opposition	579 Jul 27 j 13:57	5° <del>2</del> 21'05	-1°-9'-40	opposition	585 Oct 14 j 02:26	23° <del>1</del> 06'30	-2°-47'-20
min. Earth dist.	579 Jul 27 j 20:47	5° <del>2</del> 19'47	8.79137 AU	min. Earth dist.	585 Oct 14 j 00:39	23° <del>1</del> 06'52	8.09946 AU
direct	579 Oct 04 j 17:57	2° <del>2</del> 01'35		direct	585 Dec 19 j 12:00	19° <del>1</del> 40'42	
evening set	580 Jan 12 j 07:12	9° <del>2</del> 12'22		evening set	586 Mar 31 j 20:08	27° <del>1</del> 42'54	
conjunction	580 Jan 29 j 02:46	11° <del>2</del> 14'21	-1°-9'-24	conjunction	586 Apr 18 j 13:12	0° <del>1</del> 00'29	-2°-9'-45
minimum elong	580 Jan 29 j 02:43	11° <del>2</del> 14'21	1°09'25	minimum elong	586 Apr 18 j 13:14	0° <del>1</del> 00'29	2°09'46
max. Earth dist.	580 Jan 28 j 19:38	11° <del>2</del> 12'11	10.73457 AU		586 Apr 18 j 11:44	0° <del>1</del>	
morning rise	580 Feb 15 j 01:50	13° <del>2</del> 17'29		max. Earth dist.	586 Apr 18 j 16:55	0° <del>1</del> 01'41	10.05984 AU
	580 Feb 29 j 18:43	15° <del>2</del>		morning rise	586 May 06 j 10:03	2° <del>1</del> 19'18	
retrograde	580 May 29 j 18:42	20° <del>2</del> 50'19		retrograde	586 Aug 21 j 14:11	10° <del>1</del> 43'36	
opposition	580 Aug 08 j 08:00	17° <del>2</del> 26'14	-1°-40'-42	opposition	586 Oct 28 j 07:57	7° <del>1</del> 13'19	-2°-33'-46
min. Earth dist.	580 Aug 08 j 13:23	17° <del>2</del> 25'12	8.67495 AU	min. Earth dist.	586 Oct 28 j 04:11	7° <del>1</del> 14'06	8.02978 AU
	580 Sep 13 j 01:23	15° <del>2</del>		direct	587 Jan 02 j 13:14	3° <del>1</del> 46'27	
direct	580 Oct 15 j 22:32	14° <del>2</del> 05'56		evening set	587 Apr 15 j 17:27	11° <del>1</del> 55'39	
	580 Nov 17 j 03:21	15° <del>2</del>					
evening set	581 Jan 23 j 15:06	21° <del>2</del> 23'47		conjunction	587 May 03 j 15:02	14° <del>1</del> 15'24	-1°-54'-47
				minimum elong	587 May 03 j 15:05	14° <del>1</del> 15'25	1°54'48
conjunction	581 Feb 09 j 12:57	23° <del>2</del> 27'59	-1°-33'-2	max. Earth dist.	587 May 03 j 20:58	14° <del>1</del> 17'21	10.00394 AU
minimum elong	581 Feb 09 j 12:54	23° <del>2</del> 27'58	1°33'03		587 May 09 j 07:13	15° <del>1</del>	
max. Earth dist.	581 Feb 09 j 06:49	23° <del>2</del> 26'05	10.61336 AU	morning rise	587 May 21 j 15:31	16° <del>1</del> 36'08	
morning rise	581 Feb 26 j 14:50	25° <del>2</del> 33'29		retrograde	587 Sep 05 j 10:33	25° <del>1</del> 01'49	
	581 Apr 08 j 05:21	0° <del>1</del>		opposition	587 Nov 11 j 16:15	21° <del>1</del> 31'37	-2°-10'-32



min. Earth dist.	587 Nov 11 j 10:58	21°♄32'43	7.98818 AU	retrograde	593 Nov 27 j 07:23	19°♄14'52	
direct	588 Jan 16 j 21:22	18°♄03'48		opposition	594 Feb 02 j 02:17	15°♄51'12	1°36'48
evening set	588 Apr 29 j 20:44	26°♄18'00		min. Earth dist.	594 Feb 01 j 20:29	15°♄52'22	8.32397 AU
					594 Feb 12 j 20:18	15°♄	
conjunction	588 May 17 j 22:07	28°♄39'15	-1°-32'-35	direct	594 Apr 11 j 22:55	12°♄22'51	
minimum elong	588 May 17 j 22:10	28°♄39'17	1°32'35		594 Jun 07 j 15:09	15°♄	
max. Earth dist.	588 May 18 j 05:38	28°♄41'44	9.97792 AU	evening set	594 Jul 27 j 07:16	20°♄22'05	
	588 May 28 j 04:38	0°♄					
morning rise	588 Jun 05 j 01:22	1°♄01'08		conjunction	594 Aug 14 j 00:43	22°♄34'38	1°30'51
retrograde	588 Sep 19 j 04:51	9°♄25'02		minimum elong	594 Aug 14 j 00:40	22°♄34'37	1°30'51
opposition	588 Nov 25 j 01:25	5°♄55'17	-1°-38'-56	max. Earth dist.	594 Aug 14 j 07:14	22°♄36'40	10.38315 AU
min. Earth dist.	588 Nov 24 j 19:20	5°♄56'33	7.97738 AU	morning rise	594 Aug 31 j 13:23	24°♄45'43	
direct	589 Jan 30 j 10:51	2°♄26'41			594 Oct 19 j 06:20	0°♄	
evening set	589 May 15 j 03:22	10°♄43'34		retrograde	594 Dec 10 j 08:19	2°♄20'45	
					595 Feb 02 j 07:13	30°♄	
conjunction	589 Jun 02 j 07:22	13°♄05'28	-1°-4'-33	opposition	595 Feb 15 j 10:38	28°♄58'31	2°05'58
minimum elong	589 Jun 02 j 07:25	13°♄05'29	1°04'34	min. Earth dist.	595 Feb 15 j 06:03	28°♄59'25	8.44433 AU
max. Earth dist.	589 Jun 02 j 15:34	13°♄08'09	9.98325 AU	direct	595 Apr 25 j 20:56	25°♄31'00	
morning rise	589 Jun 20 j 12:04	15°♄27'34			595 Jul 11 j 12:39	0°♄	
retrograde	589 Oct 03 j 18:49	23°♄46'43		evening set	595 Aug 10 j 01:16	3°♄22'22	
opposition	589 Dec 09 j 09:21	20°♄17'46	-1°-1'-10				
min. Earth dist.	589 Dec 09 j 03:09	20°♄19'03	7.99760 AU	conjunction	595 Aug 27 j 13:26	5°♄31'42	1°51'53
direct	590 Feb 14 j 03:09	16°♄48'35		minimum elong	595 Aug 27 j 13:23	5°♄31'41	1°51'52
evening set	590 May 30 j 10:08	25°♄05'47		max. Earth dist.	595 Aug 27 j 18:21	5°♄33'13	10.50583 AU
				morning rise	595 Sep 13 j 20:40	7°♄39'31	
conjunction	590 Jun 17 j 15:12	27°♄27'22	0°-32'-37	retrograde	595 Dec 23 j 01:35	15°♄05'25	
minimum elong	590 Jun 17 j 15:14	27°♄27'22	0°32'39	opposition	596 Feb 28 j 12:42	11°♄44'29	2°28'01
max. Earth dist.	590 Jun 17 j 23:19	27°♄30'00	10.01855 AU	min. Earth dist.	596 Feb 28 j 09:34	11°♄45'06	8.56857 AU
morning rise	590 Jul 05 j 19:40	29°♄48'43		direct	596 May 08 j 11:20	8°♄17'59	
	590 Jul 07 j 07:05	0°♄		evening set	596 Aug 22 j 07:55	16°♄00'56	
retrograde	590 Oct 18 j 02:17	8°♄00'50					
opposition	590 Dec 23 j 14:35	4°♄32'58	0°-19'-57	conjunction	596 Sep 08 j 14:53	18°♄07'09	2°06'57
min. Earth dist.	590 Dec 23 j 08:25	4°♄34'15	8.04624 AU	minimum elong	596 Sep 08 j 14:51	18°♄07'08	2°06'57
direct	591 Feb 28 j 19:24	1°♄03'31		max. Earth dist.	596 Sep 08 j 17:46	18°♄08'02	10.62922 AU
evening set	591 Jun 14 j 13:53	9°♄18'52		morning rise	596 Sep 25 j 17:08	20°♄11'54	
asc. node	591 Jun 21 j 17:46	10°♄13'44		retrograde	597 Jan 03 j 09:53	27°♄29'29	
				opposition	597 Mar 12 j 08:37	24°♄09'42	2°42'25
conjunction	591 Jul 02 j 18:13	11°♄39'13	0°01'01	min. Earth dist.	597 Mar 12 j 06:30	24°♄10'06	8.69042 AU
minimum elong	591 Jul 02 j 18:14	11°♄39'13	0°01'01	direct	597 May 21 j 19:19	20°♄44'18	
behind sun begin	591 Jul 02 j 10:52	11°♄36'52		evening set	597 Sep 04 j 03:40	28°♄18'46	
behind sun end	591 Jul 03 j 01:35	11°♄41'34			597 Sep 18 j 04:53	0°♄	
max. Earth dist.	591 Jul 03 j 01:56	11°♄41'41	10.08023 AU				
morning rise	591 Jul 20 j 20:39	13°♄58'54		conjunction	597 Sep 21 j 05:55	0°♄22'07	2°15'48
retrograde	591 Nov 01 j 03:33	22°♄02'36		minimum elong	597 Sep 21 j 05:53	0°♄22'07	2°15'48
opposition	592 Jan 06 j 15:44	18°♄36'03	0°21'51	max. Earth dist.	597 Sep 21 j 07:13	0°♄22'31	10.74737 AU
min. Earth dist.	592 Jan 06 j 09:31	18°♄37'19	8.11953 AU	morning rise	597 Oct 08 j 03:40	2°♄24'07	
direct	592 Mar 14 j 08:46	15°♄06'41		retrograde	598 Jan 15 j 12:42	9°♄34'29	
evening set	592 Jun 28 j 12:05	23°♄18'16		opposition	598 Mar 24 j 22:49	6°♄15'38	2°49'10
				min. Earth dist.	598 Mar 24 j 21:19	6°♄15'55	8.80422 AU
conjunction	592 Jul 16 j 14:04	25°♄36'35	0°34'02	direct	598 Jun 03 j 19:56	2°♄51'26	
minimum elong	592 Jul 16 j 14:02	25°♄36'34	0°34'02	evening set	598 Sep 16 j 13:10	10°♄17'40	
max. Earth dist.	592 Jul 16 j 21:29	25°♄38'57	10.16457 AU				
morning rise	592 Aug 03 j 12:55	27°♄53'51		conjunction	598 Oct 03 j 11:28	12°♄18'33	2°18'30
	592 Aug 20 j 18:45	0°♄		minimum elong	598 Oct 03 j 11:27	12°♄18'33	2°18'30
retrograde	592 Nov 13 j 21:43	5°♄48'15		max. Earth dist.	598 Oct 03 j 12:08	12°♄18'45	10.85516 AU
opposition	593 Jan 19 j 11:48	2°♄23'07	1°01'31	morning rise	598 Oct 20 j 05:28	14°♄18'13	
min. Earth dist.	593 Jan 19 j 05:27	2°♄24'24	8.21374 AU	retrograde	599 Jan 27 j 12:09	21°♄22'36	
	593 Feb 20 j 23:39	30°♄		opposition	599 Apr 06 j 08:16	18°♄04'31	2°48'32
direct	593 Mar 28 j 18:24	28°♄54'08		min. Earth dist.	599 Apr 06 j 07:50	18°♄04'36	8.90530 AU
	593 May 03 j 09:00	0°♄		direct	599 Jun 16 j 11:11	14°♄41'32	
evening set	593 Jul 13 j 02:28	7°♄00'14		evening set	599 Sep 28 j 13:34	22°♄00'06	
conjunction	593 Jul 31 j 00:43	9°♄15'52	1°04'32	conjunction	599 Oct 15 j 08:37	23°♄58'59	2°15'19
minimum elong	593 Jul 31 j 00:40	9°♄15'52	1°04'31	minimum elong	599 Oct 15 j 08:38	23°♄59'00	2°15'20
max. Earth dist.	593 Jul 31 j 07:58	9°♄18'11	10.26738 AU	max. Earth dist.	599 Oct 15 j 08:12	23°♄58'52	10.94828 AU
morning rise	593 Aug 17 j 18:48	11°♄30'12		morning rise	599 Oct 31 j 23:52	25°♄56'49	
	593 Sep 16 j 18:07	15°♄			599 Dec 09 j 10:15	0°♄	



retrograde	600 Feb 08 j 05:42	2°♄56'35	
	600 Apr 12 j 21:25	30°♄39'05	2°41'02
opposition	600 Apr 17 j 13:36	29°♄38'49	8.98977 AU
min. Earth dist.	600 Apr 17 j 15:01	26°♄17'15	
direct	600 Jun 27 j 20:34	0°♄	
	600 Sep 06 j 17:58	3°♄29'06	
evening set	600 Oct 09 j 06:39		
conjunction	600 Oct 25 j 23:09	5°♄26'27	2°06'44
minimum elong	600 Oct 25 j 23:11	5°♄26'28	2°06'44
max. Earth dist.	600 Oct 25 j 20:28	5°♄25'40	11.02330 AU
morning rise	600 Nov 11 j 12:43	7°♄22'58	



retrograde	600 Feb 08 j 05:42	2°♄56'35		retrograde	606 Apr 17 j 16:37	10°♄28'49	
	600 Apr 12 j 21:25	30°♄		opposition	606 Jun 27 j 16:38	7°♄09'53	0°12'31
opposition	600 Apr 17 j 13:36	29°♄39'05	2°41'02	min. Earth dist.	606 Jun 27 j 22:42	7°♄08'46	9.03199 AU
min. Earth dist.	600 Apr 17 j 15:01	29°♄38'49	8.98977 AU	direct	606 Sep 06 j 00:52	3°♄51'58	
direct	600 Jun 27 j 20:34	26°♄17'15		desc. node	606 Nov 14 j 18:38	7°♄35'11	
	600 Sep 06 j 17:58	0°♄		evening set	606 Dec 14 j 23:02	10°♄51'00	
evening set	600 Oct 09 j 06:39	3°♄29'06					
				conjunction	606 Dec 31 j 14:31	12°♄48'38	0°-3'-29
conjunction	600 Oct 25 j 23:09	5°♄26'27	2°06'44	minimum elong	606 Dec 31 j 14:31	12°♄48'38	0°03'30
minimum elong	600 Oct 25 j 23:11	5°♄26'28	2°06'44	behind sun begin	606 Dec 31 j 07:35	12°♄46'36	
max. Earth dist.	600 Oct 25 j 20:28	5°♄25'40	11.02330 AU	behind sun end	606 Dec 31 j 21:26	12°♄50'39	
morning rise	600 Nov 11 j 12:43	7°♄22'58		max. Earth dist.	606 Dec 31 j 08:01	12°♄46'44	10.99844 AU
retrograde	601 Feb 18 j 21:18	14°♄19'34		morning rise	607 Jan 17 j 07:44	14°♄46'50	
opposition	601 Apr 29 j 15:39	11°♄02'26	2°27'18	retrograde	607 Apr 29 j 22:23	21°♄57'30	
min. Earth dist.	601 Apr 29 j 18:34	11°♄01'53	9.05456 AU	opposition	607 Jul 09 j 22:13	18°♄37'30	0°-21'-18
direct	601 Jul 10 j 01:08	7°♄41'40		min. Earth dist.	607 Jul 10 j 03:38	18°♄36'29	8.95939 AU
evening set	601 Oct 20 j 17:51	14°♄47'56		direct	607 Sep 17 j 19:25	15°♄19'27	
	601 Oct 22 j 11:47	15°♄		evening set	607 Dec 26 j 12:02	22°♄21'40	
conjunction	601 Nov 06 j 08:40	16°♄44'14	1°53'16	conjunction	608 Jan 12 j 04:50	24°♄20'41	0°-31'-3
minimum elong	601 Nov 06 j 08:42	16°♄44'15	1°53'16	minimum elong	608 Jan 12 j 04:49	24°♄20'40	0°31'05
max. Earth dist.	601 Nov 06 j 04:32	16°♄43'01	11.07758 AU	max. Earth dist.	608 Jan 11 j 22:11	24°♄18'42	10.91615 AU
morning rise	601 Nov 22 j 21:21	18°♄39'56		morning rise	608 Jan 29 j 00:08	26°♄20'30	
retrograde	602 Mar 02 j 11:22	25°♄34'56			608 Mar 02 j 19:26	0°≈	
opposition	602 May 11 j 15:43	22°♄17'54	2°08'04	retrograde	608 May 11 j 11:57	3°≈38'45	
min. Earth dist.	602 May 11 j 19:07	22°♄17'17	9.09739 AU	opposition	608 Jul 21 j 08:05	0°≈17'31	0°-54'-55
direct	602 Jul 22 j 00:41	18°♄58'07		min. Earth dist.	608 Jul 21 j 13:29	0°≈16'30	8.86803 AU
evening set	602 Nov 01 j 00:40	26°♄00'00			608 Jul 25 j 05:40	30°♄	
				direct	608 Sep 28 j 17:13	26°♄59'04	
conjunction	602 Nov 17 j 14:41	27°♄55'45	1°35'34		608 Nov 29 j 00:50	0°≈	
minimum elong	602 Nov 17 j 14:44	27°♄55'45	1°35'33	evening set	609 Jan 06 j 07:18	4°≈06'00	
max. Earth dist.	602 Nov 17 j 10:18	27°♄54'27	11.10913 AU				
morning rise	602 Dec 04 j 03:07	29°♄51'06		conjunction	609 Jan 23 j 01:37	6°≈06'42	0°-57'-51
	602 Dec 05 j 10:15	0°♄		minimum elong	609 Jan 23 j 01:35	6°≈06'41	0°57'53
retrograde	603 Mar 14 j 03:51	6°♄46'06		max. Earth dist.	609 Jan 22 j 18:23	6°≈04'31	10.81647 AU
opposition	603 May 23 j 14:46	3°♄28'56	1°44'06	morning rise	609 Feb 08 j 23:23	8°≈08'27	
min. Earth dist.	603 May 23 j 18:31	3°♄28'15	9.11675 AU		609 Apr 27 j 07:48	15°≈	
direct	603 Aug 02 j 21:25	0°♄09'57		retrograde	609 May 24 j 06:57	15°≈35'29	
evening set	603 Nov 12 j 05:21	7°♄08'51			609 Jun 20 j 11:48	15°≈	
				opposition	609 Aug 02 j 23:03	12°≈12'54	-1°-26'-59
conjunction	603 Nov 28 j 19:04	9°♄04'28	1°14'16	min. Earth dist.	609 Aug 03 j 04:43	12°≈11'49	8.76102 AU
minimum elong	603 Nov 28 j 19:06	9°♄04'29	1°14'17	direct	609 Oct 10 j 18:24	8°≈53'46	
max. Earth dist.	603 Nov 28 j 13:59	9°♄02'59	11.11683 AU		610 Jan 08 j 22:58	15°≈	
morning rise	603 Dec 15 j 07:58	10°♄59'56		evening set	610 Jan 18 j 10:20	16°≈06'54	
retrograde	604 Mar 24 j 21:06	17°♄56'28					
opposition	604 Jun 03 j 13:45	14°♄38'58	1°16'15	conjunction	610 Feb 04 j 06:43	18°≈09'36	-1°-22'-42
min. Earth dist.	604 Jun 03 j 18:47	14°♄38'03	9.11203 AU	minimum elong	610 Feb 04 j 06:40	18°≈09'35	1°22'43
direct	604 Aug 13 j 13:43	11°♄20'35		max. Earth dist.	610 Feb 03 j 23:38	18°≈07'26	10.70277 AU
evening set	604 Nov 22 j 09:33	18°♄17'59		morning rise	610 Feb 21 j 07:11	20°≈13'34	
				retrograde	610 Jun 06 j 09:23	27°≈50'22	
conjunction	604 Dec 08 j 23:19	20°♄13'53	0°50'08	opposition	610 Aug 15 j 19:39	24°≈26'16	-1°-56'00
minimum elong	604 Dec 08 j 23:21	20°♄13'54	0°50'09	min. Earth dist.	610 Aug 16 j 01:10	24°≈25'13	8.64202 AU
max. Earth dist.	604 Dec 08 j 16:36	20°♄11'55	11.10046 AU	direct	610 Oct 23 j 03:03	21°≈06'14	
morning rise	604 Dec 25 j 13:21	22°♄09'54		evening set	611 Jan 30 j 22:24	28°≈26'55	
retrograde	605 Apr 05 j 16:06	29°♄09'34			611 Feb 12 j 14:09	0°♄	
opposition	605 Jun 15 j 14:05	25°♄51'29	0°45'24				
min. Earth dist.	605 Jun 15 j 20:10	25°♄50'22	9.08345 AU	conjunction	611 Feb 16 j 21:28	0°♄31'58	-1°-44'-19
direct	605 Aug 25 j 06:48	22°♄33'26		minimum elong	611 Feb 16 j 21:25	0°♄31'58	1°44'20
evening set	605 Dec 03 j 14:46	29°♄30'53		max. Earth dist.	611 Feb 16 j 15:35	0°♄30'09	10.57902 AU
	605 Dec 07 j 19:18	0°♄		morning rise	611 Mar 06 j 00:53	2°♄38'25	
				retrograde	611 Jun 19 j 21:49	10°♄25'36	
conjunction	605 Dec 20 j 05:09	1°♄27'28	0°23'58	opposition	611 Aug 28 j 22:32	7°♄00'01	-2°-20'-24
minimum elong	605 Dec 20 j 05:09	1°♄27'28	0°23'58	min. Earth dist.	611 Aug 29 j 02:50	6°♄59'10	8.51561 AU
max. Earth dist.	605 Dec 19 j 21:56	1°♄25'21	11.06057 AU	direct	611 Nov 04 j 17:41	3°♄38'55	
morning rise	606 Jan 05 j 20:40	3°♄24'24		evening set	612 Feb 12 j 20:47	11°♄08'15	



conjunction	612 Feb 29 j 22:57	13° <del>✕</del> 15'54	-2°-1'-26	min. Earth dist.	617 Nov 18 j 10:18	29° <del>8</del> 19'31	7.97842 AU
minimum elong	612 Feb 29 j 22:54	13° <del>✕</del> 15'54	2°01'27	direct	618 Jan 23 j 23:52	25° <del>8</del> 49'58	
max. Earth dist.	612 Feb 29 j 18:25	13° <del>✕</del> 14'29	10.45085 AU		618 Apr 03 j 23:53	0° <del>II</del>	
morning rise	612 Mar 18 j 05:38	15° <del>✕</del> 25'02		evening set	618 May 08 j 05:20	4° <del>II</del> 05'21	
retrograde	612 Jul 02 j 19:26	23° <del>✕</del> 22'37					
opposition	612 Sep 10 j 07:55	19° <del>✕</del> 55'36	-2°-38'-33	conjunction	618 May 26 j 08:22	6° <del>II</del> 27'01	-1°-18'-40
min. Earth dist.	612 Sep 10 j 10:41	19° <del>✕</del> 55'03	8.38832 AU	minimum elong	618 May 26 j 08:25	6° <del>II</del> 27'02	1°18'40
direct	612 Nov 16 j 13:58	16° <del>✕</del> 33'18		max. Earth dist.	618 May 26 j 15:01	6° <del>II</del> 29'12	9.97321 AU
evening set	613 Feb 25 j 06:06	24° <del>✕</del> 11'57		morning rise	618 Jun 13 j 12:34	8° <del>II</del> 49'06	
				retrograde	618 Sep 27 j 03:24	17° <del>II</del> 10'39	
conjunction	613 Mar 14 j 11:51	26° <del>✕</del> 22'22	-2°-12'-48	opposition	618 Dec 02 j 22:34	13° <del>II</del> 40'47	-1°-20'-1
minimum elong	613 Mar 14 j 11:50	26° <del>✕</del> 22'22	2°12'48	min. Earth dist.	618 Dec 02 j 16:53	13° <del>II</del> 41'58	7.97728 AU
max. Earth dist.	613 Mar 14 j 08:35	26° <del>✕</del> 21'20	10.32553 AU	direct	619 Feb 07 j 13:40	10° <del>II</del> 11'20	
morning rise	613 Mar 31 j 22:20	28° <del>✕</del> 34'19		evening set	619 May 23 j 11:53	18° <del>II</del> 28'34	
	613 Apr 12 j 15:05	0° <del>Y</del>					
retrograde	613 Jul 16 j 23:24	6° <del>Y</del> 41'34		conjunction	619 Jun 10 j 16:51	20° <del>II</del> 50'31	0°-48'-23
opposition	613 Sep 23 j 23:53	3° <del>Y</del> 13'15	-2°-48'-52	minimum elong	619 Jun 10 j 16:53	20° <del>II</del> 50'32	0°48'24
min. Earth dist.	613 Sep 24 j 01:13	3° <del>Y</del> 12'59	8.26752 AU	max. Earth dist.	619 Jun 11 j 00:54	20° <del>II</del> 53'09	9.98835 AU
	613 Nov 16 j 03:00	30° <del>R</del> <del>✕</del>		morning rise	619 Jun 28 j 21:35	23° <del>II</del> 12'24	
direct	613 Nov 29 j 19:43	29° <del>✕</del> 49'36			619 Sep 01 j 08:24	0° <del>☿</del>	
	613 Dec 13 j 11:30	0° <del>Y</del>		retrograde	619 Oct 11 j 15:00	1° <del>☿</del> 28'22	
evening set	614 Mar 11 j 02:24	7° <del>Y</del> 37'42			619 Nov 21 j 08:09	30° <del>R</del> <del>II</del>	
				opposition	619 Dec 17 j 05:06	27° <del>II</del> 59'21	0°-40'-7
conjunction	614 Mar 28 j 12:18	9° <del>Y</del> 50'57	-2°-17'-15	min. Earth dist.	619 Dec 16 j 22:42	28° <del>II</del> 00'41	8.00756 AU
minimum elong	614 Mar 28 j 12:18	9° <del>Y</del> 50'57	2°17'16	direct	620 Feb 22 j 04:16	24° <del>II</del> 29'27	
max. Earth dist.	614 Mar 28 j 10:15	9° <del>Y</del> 50'18	10.21038 AU		620 May 15 j 01:43	0° <del>☿</del>	
morning rise	614 Apr 15 j 02:57	12° <del>Y</del> 05'44		evening set	620 Jun 06 j 17:06	2° <del>☿</del> 46'07	
retrograde	614 Jul 31 j 09:41	20° <del>Y</del> 21'06					
opposition	614 Oct 07 j 21:44	16° <del>Y</del> 51'45	-2°-50'-5	conjunction	620 Jun 24 j 22:14	5° <del>☿</del> 07'20	0°-15'-20
min. Earth dist.	614 Oct 07 j 22:04	16° <del>Y</del> 51'41	8.16021 AU	minimum elong	620 Jun 24 j 22:15	5° <del>☿</del> 07'21	0°15'21
direct	614 Dec 13 j 09:54	13° <del>Y</del> 26'42		behind sun begin	620 Jun 24 j 20:34	5° <del>☿</del> 06'48	
evening set	615 Mar 25 j 09:18	21° <del>Y</del> 23'46		behind sun end	620 Jun 24 j 23:55	5° <del>☿</del> 07'53	
				max. Earth dist.	620 Jun 25 j 06:51	5° <del>☿</del> 10'08	10.03403 AU
conjunction	615 Apr 11 j 23:46	23° <del>Y</del> 39'48	-2°-14'-3	morning rise	620 Jul 13 j 01:49	7° <del>☿</del> 28'04	
minimum elong	615 Apr 11 j 23:48	23° <del>Y</del> 39'48	2°14'03	retrograde	620 Oct 24 j 20:58	15° <del>☿</del> 36'25	
max. Earth dist.	615 Apr 11 j 23:35	23° <del>Y</del> 39'44	10.11219 AU	asc. node	620 Dec 14 j 12:39	13° <del>☿</del> 25'02	
morning rise	615 Apr 29 j 18:38	25° <del>Y</del> 57'13		opposition	620 Dec 30 j 08:25	12° <del>☿</del> 08'34	0°01'45
	615 Jun 02 j 23:54	0° <del>8</del>		min. Earth dist.	620 Dec 30 j 01:57	12° <del>☿</del> 09'54	8.06717 AU
retrograde	615 Aug 15 j 00:36	4° <del>8</del> 18'29		direct	621 Mar 07 j 18:27	8° <del>☿</del> 38'30	
opposition	615 Oct 22 j 00:19	0° <del>8</del> 48'25	-2°-41'-23	evening set	621 Jun 21 j 18:24	16° <del>☿</del> 52'26	
min. Earth dist.	615 Oct 21 j 23:26	0° <del>8</del> 48'36	8.07285 AU				
	615 Oct 31 j 22:39	30° <del>R</del> <del>Y</del>		conjunction	621 Jul 09 j 21:51	19° <del>☿</del> 11'59	0°18'17
direct	615 Dec 27 j 07:39	27° <del>Y</del> 22'00		minimum elong	621 Jul 09 j 21:50	19° <del>☿</del> 11'59	0°18'17
	616 Feb 19 j 17:58	0° <del>8</del>		max. Earth dist.	621 Jul 10 j 06:11	19° <del>☿</del> 14'40	10.10709 AU
evening set	616 Apr 08 j 01:25	5° <del>8</del> 26'59		morning rise	621 Jul 27 j 22:39	21° <del>☿</del> 30'40	
				retrograde	621 Nov 07 j 18:38	29° <del>☿</del> 29'59	
conjunction	616 Apr 25 j 20:37	7° <del>8</del> 45'29	-2°-2'-51	opposition	622 Jan 13 j 07:04	26° <del>☿</del> 03'33	0°42'47
minimum elong	616 Apr 25 j 20:40	7° <del>8</del> 45'30	2°02'52	min. Earth dist.	622 Jan 13 j 01:01	26° <del>☿</del> 04'47	8.15217 AU
max. Earth dist.	616 Apr 25 j 22:44	7° <del>8</del> 46'11	10.03705 AU	direct	622 Mar 22 j 06:58	22° <del>☿</del> 33'43	
morning rise	616 May 13 j 19:26	10° <del>8</del> 05'10			622 Jun 30 j 18:17	0° <del>♊</del>	
	616 Jun 25 j 03:46	15° <del>8</del>		evening set	622 Jul 06 j 12:55	0° <del>♊</del> 42'58	
retrograde	616 Aug 28 j 18:23	18° <del>8</del> 29'34					
opposition	616 Nov 04 j 06:31	14° <del>8</del> 59'09	-2°-22'-45	conjunction	622 Jul 24 j 13:07	3° <del>♊</del> 00'05	0°50'14
min. Earth dist.	616 Nov 04 j 04:00	14° <del>8</del> 59'40	8.01095 AU	minimum elong	622 Jul 24 j 13:04	3° <del>♊</del> 00'04	0°50'13
	616 Nov 04 j 02:25	15° <del>R</del> <del>8</del>		max. Earth dist.	622 Jul 24 j 20:33	3° <del>♊</del> 02'27	10.20280 AU
direct	617 Jan 09 j 13:01	11° <del>8</del> 31'31		morning rise	622 Aug 11 j 09:46	5° <del>♊</del> 16'03	
	617 Mar 13 j 17:46	15° <del>8</del>		retrograde	622 Nov 21 j 07:02	13° <del>♊</del> 05'41	
evening set	617 Apr 23 j 00:47	19° <del>8</del> 42'43		opposition	623 Jan 27 j 00:23	9° <del>♊</del> 40'47	1°20'26
				min. Earth dist.	623 Jan 26 j 18:36	9° <del>♊</del> 41'57	8.25723 AU
conjunction	617 May 11 j 00:23	22° <del>8</del> 03'11	-1°-44'-3	direct	623 Apr 05 j 14:59	6° <del>♊</del> 11'34	
minimum elong	617 May 11 j 00:27	22° <del>8</del> 03'13	1°44'03	evening set	623 Jul 20 j 22:21	14° <del>♊</del> 14'31	
max. Earth dist.	617 May 11 j 04:56	22° <del>8</del> 04'41	9.98976 AU		623 Jul 27 j 00:38	15° <del>♊</del>	
morning rise	617 May 29 j 02:30	24° <del>8</del> 24'29					
	617 Jul 17 j 08:33	0° <del>II</del>		conjunction	623 Aug 07 j 18:08	16° <del>♊</del> 28'40	1°18'43
retrograde	617 Sep 12 j 11:53	2° <del>II</del> 48'59		minimum elong	623 Aug 07 j 18:05	16° <del>♊</del> 28'39	1°18'43
	617 Nov 10 j 06:01	30° <del>R</del> <del>8</del>		max. Earth dist.	623 Aug 08 j 00:43	16° <del>♊</del> 30'45	10.31538 AU
opposition	617 Nov 18 j 14:33	29° <del>8</del> 18'38	-1°-55'-2	morning rise	623 Aug 25 j 09:43	18° <del>♊</del> 41'28	



retrograde	623 Dec 04 j 11:37	26°♏21'23		min. Earth dist.	630 Apr 24 j 09:55	5°♍56'35	9.03369 AU
opposition	624 Feb 09 j 11:40	22°♏58'03	1°52'43	direct	630 Jul 04 j 17:16	2°♍36'06	
min. Earth dist.	624 Feb 09 j 05:53	22°♏59'13	8.37613 AU	evening set	630 Oct 15 j 18:42	9°♍45'04	
direct	624 Apr 18 j 16:23	19°♏29'46					
evening set	624 Aug 02 j 21:35	27°♏25'15		conjunction	630 Nov 01 j 10:22	11°♍41'50	2°00'03
				minimum elong	630 Nov 01 j 10:24	11°♍41'50	2°00'02
conjunction	624 Aug 20 j 12:24	29°♏36'14	1°42'24	max. Earth dist.	630 Nov 01 j 07:43	11°♍41'03	11.06188 AU
minimum elong	624 Aug 20 j 12:21	29°♏36'13	1°42'24	morning rise	630 Nov 17 j 23:13	13°♍37'51	
max. Earth dist.	624 Aug 20 j 18:29	29°♏38'07	10.43844 AU		630 Nov 30 j 02:39	15°♍	
	624 Aug 23 j 16:36	0°♐		retrograde	631 Feb 25 j 12:13	20°♍33'35	
morning rise	624 Sep 06 j 22:29	1°♐45'44		opposition	631 May 06 j 10:05	17°♍17'01	2°17'34
retrograde	624 Dec 16 j 09:43	9°♐16'14		min. Earth dist.	631 May 06 j 13:27	17°♍16'24	9.08675 AU
opposition	625 Feb 21 j 16:35	5°♐54'26	2°18'16		631 Jun 09 j 14:57	15°♐♍	
min. Earth dist.	625 Feb 21 j 11:19	5°♐55'29	8.50230 AU	direct	631 Jul 16 j 17:37	13°♍57'16	
direct	625 May 02 j 09:30	2°♐27'18			631 Aug 22 j 05:20	15°♍	
evening set	625 Aug 16 j 09:58	10°♐14'38		evening set	631 Oct 27 j 03:56	21°♍01'17	
conjunction	625 Sep 02 j 19:37	12°♐22'25	2°00'23	conjunction	631 Nov 12 j 18:15	22°♍57'15	1°44'15
minimum elong	625 Sep 02 j 19:34	12°♐22'24	2°00'23	minimum elong	631 Nov 12 j 18:17	22°♍57'16	1°44'14
max. Earth dist.	625 Sep 03 j 00:59	12°♐24'04	10.56540 AU	max. Earth dist.	631 Nov 12 j 13:07	22°♍55'45	11.10287 AU
morning rise	625 Sep 20 j 00:15	14°♐28'42		morning rise	631 Nov 29 j 06:43	24°♍52'44	
retrograde	625 Dec 28 j 23:00	21°♐50'29			632 Jan 20 j 15:19	0°♑	
opposition	626 Mar 06 j 15:40	18°♐30'08	2°36'21	retrograde	632 Mar 08 j 03:07	1°♑47'44	
min. Earth dist.	626 Mar 06 j 11:39	18°♐30'55	8.62922 AU		632 Apr 26 j 11:08	30°♐♍	
direct	626 May 15 j 20:20	15°♐04'18		opposition	632 May 17 j 09:55	28°♍31'07	1°55'44
evening set	626 Aug 29 j 11:18	22°♐43'09		min. Earth dist.	632 May 17 j 15:08	28°♍30'10	9.11493 AU
				direct	632 Jul 27 j 16:47	25°♍12'08	
conjunction	626 Sep 15 j 15:55	24°♐47'55	2°12'13		632 Oct 17 j 08:11	0°♑	
minimum elong	626 Sep 15 j 15:54	24°♐47'54	2°12'13	evening set	632 Nov 06 j 10:02	2°♑12'36	
max. Earth dist.	626 Sep 15 j 19:57	24°♐49'08	10.69002 AU				
morning rise	626 Oct 02 j 15:40	26°♐51'14		conjunction	632 Nov 22 j 23:42	4°♑08'16	1°24'32
	626 Oct 30 j 16:24	0°♑		minimum elong	632 Nov 22 j 23:45	4°♑08'16	1°24'32
retrograde	627 Jan 10 j 05:51	4°♑05'16		max. Earth dist.	632 Nov 22 j 16:53	4°♑06'16	11.11875 AU
opposition	627 Mar 19 j 09:05	0°♑46'12	2°46'44	morning rise	632 Dec 09 j 12:26	6°♑03'40	
min. Earth dist.	627 Mar 19 j 06:56	0°♑46'37	8.75093 AU	retrograde	633 Mar 19 j 19:05	12°♑59'33	
	627 Mar 29 j 12:18	30°♐♐		opposition	633 May 29 j 09:15	9°♑42'33	1°29'35
direct	627 May 28 j 23:47	27°♐21'43		min. Earth dist.	633 May 29 j 15:06	9°♑41'28	9.11784 AU
	627 Jul 26 j 09:44	0°♑		direct	633 Aug 08 j 12:23	6°♑24'06	
evening set	627 Sep 11 j 02:12	4°♑52'11		evening set	633 Nov 17 j 14:39	13°♑22'25	
conjunction	627 Sep 28 j 02:17	6°♑54'15	2°17'49	conjunction	633 Dec 04 j 04:25	15°♑18'12	1°01'38
minimum elong	627 Sep 28 j 02:16	6°♑54'15	2°17'50	minimum elong	633 Dec 04 j 04:27	15°♑18'13	1°01'38
max. Earth dist.	627 Sep 28 j 03:56	6°♑54'45	10.80676 AU	max. Earth dist.	633 Dec 03 j 21:33	15°♑16'12	11.10957 AU
morning rise	627 Oct 14 j 22:03	8°♑55'02		morning rise	633 Dec 20 j 17:50	17°♑13'58	
retrograde	628 Jan 22 j 06:36	16°♑02'25		retrograde	634 Mar 31 j 14:16	24°♑12'20	
opposition	628 Mar 30 j 21:08	12°♑44'23	2°49'32	opposition	634 Jun 10 j 09:20	20°♑54'39	1°00'01
min. Earth dist.	628 Mar 30 j 20:21	12°♑44'32	8.86207 AU	min. Earth dist.	634 Jun 10 j 15:15	20°♑53'34	9.09597 AU
direct	628 Jun 09 j 19:17	9°♑21'14		direct	634 Aug 20 j 06:27	17°♑36'30	
evening set	628 Sep 22 j 07:28	16°♑43'43		evening set	634 Nov 28 j 19:30	24°♑34'07	
conjunction	628 Oct 09 j 03:54	18°♑43'32	2°17'23	conjunction	634 Dec 15 j 09:43	26°♑30'27	0°36'18
minimum elong	628 Oct 09 j 03:54	18°♑43'32	2°17'23	minimum elong	634 Dec 15 j 09:44	26°♑30'27	0°36'18
max. Earth dist.	628 Oct 09 j 03:41	18°♑43'28	10.91058 AU	max. Earth dist.	634 Dec 15 j 02:19	26°♑28'16	11.07600 AU
morning rise	628 Oct 25 j 20:33	20°♑42'14		morning rise	635 Jan 01 j 00:24	28°♑26'59	
retrograde	629 Feb 02 j 02:10	27°♑44'17			635 Jan 14 j 19:36	0°♒	
opposition	629 Apr 12 j 04:41	24°♑27'00	2°45'12	retrograde	635 Apr 12 j 13:28	5°♒29'22	
min. Earth dist.	629 Apr 12 j 04:47	24°♑26'59	8.95771 AU	opposition	635 Jun 22 j 11:06	2°♒10'45	0°27'57
direct	629 Jun 22 j 10:03	21°♑05'07		min. Earth dist.	635 Jun 22 j 17:42	2°♒09'32	9.05037 AU
evening set	629 Oct 04 j 04:25	28°♑20'21			635 Jul 24 j 18:35	30°♐♑	
	629 Oct 18 j 07:58	0°♒		direct	635 Aug 31 j 23:17	28°♑52'37	
					635 Oct 08 j 05:39	0°♒	
conjunction	629 Oct 20 j 22:05	0°♒18'23	2°11'17	evening set	635 Dec 10 j 02:36	5°♒51'07	
minimum elong	629 Oct 20 j 22:06	0°♒18'24	2°11'17				
max. Earth dist.	629 Oct 20 j 20:53	0°♒18'02	10.99688 AU	conjunction	635 Dec 26 j 17:31	7°♒48'20	0°09'23
morning rise	629 Nov 06 j 12:21	2°♒15'28		minimum elong	635 Dec 26 j 17:31	7°♒48'20	0°09'23
retrograde	630 Feb 13 j 20:53	9°♒13'36		behind sun begin	635 Dec 26 j 11:39	7°♒46'37	
opposition	630 Apr 24 j 08:39	5°♒56'49	2°34'19	behind sun end	635 Dec 26 j 23:24	7°♒50'03	



max. Earth dist.	635 Dec 26 j 08:53	7°☾45'47	11.01940 AU	morning rise	642 Mar 25 j 23:45	22°☾44'41	
morning rise	636 Jan 12 j 09:59	9°☾46'01			642 Jun 10 j 01:46	0°☿	
retrograde	636 Apr 23 j 15:08	16°☾53'56		retrograde	642 Jul 10 j 18:24	0°☿48'14	
desc. node	636 May 02 j 08:20	16°☾50'17			642 Aug 10 j 17:10	30°♊	
opposition	636 Jul 03 j 15:22	13°☾34'10	0°-5'-35	opposition	642 Sep 18 j 02:31	27°☾19'57	-2°-45'-18
min. Earth dist.	636 Jul 03 j 22:50	13°☾32'47	8.98279 AU	min. Earth dist.	642 Sep 18 j 04:37	27°☾19'32	8.30576 AU
direct	636 Sep 11 j 17:29	10°☾15'47		direct	642 Nov 24 j 04:08	23°☾56'25	
evening set	636 Dec 20 j 13:23	17°☾16'49			643 Feb 19 j 08:53	0°☿	
				evening set	643 Mar 05 j 02:21	1°☿40'49	
conjunction	637 Jan 06 j 05:28	19°☾15'16	0°-18'-19				
minimum elong	637 Jan 06 j 05:27	19°☾15'16	0°18'20	conjunction	643 Mar 22 j 10:26	3°☿52'57	-2°-16'-9
max. Earth dist.	637 Jan 05 j 20:50	19°☾12'43	10.94185 AU	minimum elong	643 Mar 22 j 10:26	3°☿52'57	2°16'09
morning rise	637 Jan 22 j 23:56	21°☾14'27		max. Earth dist.	643 Mar 22 j 09:17	3°☿52'35	10.24731 AU
retrograde	637 May 06 j 00:10	28°☾29'26		morning rise	643 Apr 08 j 23:09	6°☿06'37	
opposition	637 Jul 15 j 23:28	25°☾08'19	0°-39'-29	retrograde	643 Jul 25 j 02:52	14°☿19'06	
min. Earth dist.	637 Jul 16 j 06:32	25°☾06'59	8.89571 AU	opposition	643 Oct 01 j 22:03	10°☿49'48	-2°-50'-47
direct	637 Sep 23 j 15:28	21°☾49'29		min. Earth dist.	643 Oct 01 j 22:00	10°☿49'48	8.19503 AU
evening set	638 Jan 01 j 05:28	28°☾54'34		direct	643 Dec 07 j 14:08	7°☿25'06	
	638 Jan 10 j 09:31	0°♊		evening set	644 Mar 18 j 04:42	15°☿18'42	
conjunction	638 Jan 17 j 23:11	0°♊54'38	0°-45'-38	conjunction	644 Apr 04 j 17:12	17°☿33'38	-2°-16'-29
minimum elong	638 Jan 17 j 23:10	0°♊54'37	0°45'40	minimum elong	644 Apr 04 j 17:13	17°☿33'39	2°16'30
max. Earth dist.	638 Jan 17 j 15:41	0°♊52'22	10.84609 AU	max. Earth dist.	644 Apr 04 j 18:24	17°☿34'02	10.14420 AU
morning rise	638 Feb 03 j 19:49	2°♊55'38		morning rise	644 Apr 22 j 10:00	19°☿50'01	
retrograde	638 May 18 j 16:52	10°♊19'01		retrograde	644 Aug 07 j 17:36	28°☿09'33	
opposition	638 Jul 28 j 12:09	6°♊56'25	-1°-12'-29	opposition	644 Oct 14 j 23:04	24°☿39'34	-2°-46'-36
min. Earth dist.	638 Jul 28 j 18:06	6°♊55'17	8.79225 AU	min. Earth dist.	644 Oct 14 j 21:00	24°☿39'59	8.10159 AU
direct	638 Oct 05 j 15:17	3°♊36'57		direct	644 Dec 20 j 07:27	21°☿13'43	
evening set	639 Jan 13 j 04:53	10°♊47'39		evening set	645 Apr 01 j 17:13	29°☿15'45	
					645 Apr 07 j 11:05	0°♊	
conjunction	639 Jan 30 j 00:30	12°♊49'38	-1°-11'-34	conjunction	645 Apr 19 j 10:21	1°♊33'18	-2°-8'-54
minimum elong	639 Jan 30 j 00:27	12°♊49'37	1°11'34	minimum elong	645 Apr 19 j 10:24	1°♊33'19	2°08'55
max. Earth dist.	639 Jan 29 j 17:45	12°♊47'34	10.73566 AU	max. Earth dist.	645 Apr 19 j 13:31	1°♊34'20	10.06179 AU
morning rise	639 Feb 15 j 23:37	14°♊52'44		morning rise	645 May 07 j 07:19	3°♊52'08	
	639 Feb 17 j 00:03	15°♊		retrograde	645 Aug 22 j 12:18	12°♊16'06	
retrograde	639 May 31 j 17:03	22°♊25'35		opposition	645 Oct 29 j 04:21	8°♊45'48	-2°-32'-22
opposition	639 Aug 10 j 06:08	19°♊01'28	-1°-43'-9	min. Earth dist.	645 Oct 29 j 00:54	8°♊46'31	8.03150 AU
min. Earth dist.	639 Aug 10 j 11:06	19°♊00'31	8.67634 AU	direct	646 Jan 03 j 09:18	5°♊18'52	
direct	639 Oct 17 j 20:07	15°♊41'11		evening set	646 Apr 16 j 14:16	13°♊27'57	
evening set	640 Jan 25 j 12:54	22°♊58'55			646 Apr 28 j 10:09	15°♊	
conjunction	640 Feb 11 j 10:42	25°♊03'06	-1°-34'-51	conjunction	646 May 04 j 11:54	15°♊47'42	-1°-53'-24
minimum elong	640 Feb 11 j 10:39	25°♊03'05	1°34'52	minimum elong	646 May 04 j 11:58	15°♊47'43	1°53'26
max. Earth dist.	640 Feb 11 j 04:00	25°♊01'02	10.61498 AU	max. Earth dist.	646 May 04 j 16:46	15°♊49'17	10.00548 AU
morning rise	640 Feb 28 j 12:45	27°♊08'36		morning rise	646 May 22 j 12:36	18°♊08'26	
	640 Mar 24 j 09:36	0°♊		retrograde	646 Sep 06 j 07:08	26°♊33'48	
retrograde	640 Jun 13 j 01:59	4°♊51'38		opposition	646 Nov 12 j 12:24	23°♊03'37	-2°-8'-32
opposition	640 Aug 22 j 06:25	1°♊26'01	-2°-9'-56	min. Earth dist.	646 Nov 12 j 07:56	23°♊04'33	7.98945 AU
min. Earth dist.	640 Aug 22 j 10:55	1°♊25'09	8.55278 AU	direct	647 Jan 17 j 18:29	19°♊35'45	
	640 Sep 10 j 08:55	30°♊		evening set	647 May 01 j 17:30	27°♊49'55	
direct	640 Oct 29 j 06:41	28°♊04'45			647 May 18 j 08:53	0°♊	
	640 Dec 15 j 11:41	0°♊		conjunction	647 May 19 j 18:55	0°♊11'10	-1°-30'-47
evening set	641 Feb 06 j 06:30	5°♊30'42		minimum elong	647 May 19 j 18:59	0°♊11'11	1°30'47
conjunction	641 Feb 23 j 07:03	7°♊37'19	-1°-54'-14	max. Earth dist.	647 May 20 j 01:12	0°♊13'14	9.97902 AU
minimum elong	641 Feb 23 j 07:01	7°♊37'18	1°54'15	morning rise	647 Jun 06 j 22:22	2°♊33'03	
max. Earth dist.	641 Feb 23 j 01:22	7°♊35'33	10.48930 AU	retrograde	647 Sep 21 j 00:01	10°♊56'40	
morning rise	641 Mar 12 j 12:23	9°♊45'26		opposition	647 Nov 26 j 21:18	7°♊26'59	-1°-36'-28
retrograde	641 Jun 26 j 18:35	17°♊38'56		min. Earth dist.	647 Nov 26 j 16:02	7°♊28'04	7.97827 AU
opposition	641 Sep 04 j 13:17	14°♊11'54	-2°-31'-12	direct	648 Feb 01 j 07:56	3°♊58'20	
min. Earth dist.	641 Sep 04 j 16:54	14°♊11'12	8.42718 AU	evening set	648 May 16 j 00:02	12°♊15'15	
direct	641 Nov 11 j 00:42	10°♊49'32					
evening set	642 Feb 19 j 10:51	18°♊24'31		conjunction	648 Jun 03 j 04:05	14°♊37'09	-1°-2'-26
conjunction	642 Mar 08 j 14:53	20°♊33'50	-2°-8'-24	minimum elong	648 Jun 03 j 04:08	14°♊37'10	1°02'26
minimum elong	642 Mar 08 j 14:51	20°♊33'49	2°08'25	max. Earth dist.	648 Jun 03 j 11:32	14°♊39'36	9.98410 AU
max. Earth dist.	642 Mar 08 j 11:10	20°♊32'39	10.36458 AU	morning rise	648 Jun 21 j 08:53	16°♊59'15	



retrograde	648 Oct 04 j 13:34	25°II18'12		conjunction	654 Aug 28 j 09:12	7°mp01'50	1°53'09
opposition	648 Dec 10 j 05:10	21°II49'18	0°-58'-23	minimum elong	654 Aug 28 j 09:09	7°mp01'49	1°53'08
min. Earth dist.	648 Dec 09 j 23:04	21°II50'34	7.99850 AU	max. Earth dist.	654 Aug 28 j 13:02	7°mp03'01	10.50519 AU
direct	649 Feb 14 j 23:33	18°II20'08		morning rise	654 Sep 14 j 16:22	9°mp09'38	
evening set	649 May 31 j 06:37	26°II37'19		retrograde	654 Dec 23 j 20:04	16°mp35'40	
				opposition	655 Mar 01 j 08:37	13°mp14'46	2°29'18
conjunction	649 Jun 18 j 11:46	28°II58'55	0°-30'-19	min. Earth dist.	655 Mar 01 j 05:30	13°mp15'22	8.56738 AU
minimum elong	649 Jun 18 j 11:48	28°II58'55	0°30'20	direct	655 May 10 j 08:25	9°mp48'17	
max. Earth dist.	649 Jun 18 j 20:01	29°II01'36	10.01972 AU	evening set	655 Aug 24 j 03:56	17°mp31'25	
	649 Jun 26 j 07:18	0°♄					
morning rise	649 Jul 06 j 16:13	1°♄20'13		conjunction	655 Sep 10 j 10:43	19°mp37'36	2°07'45
retrograde	649 Oct 18 j 21:57	9°♄32'10		minimum elong	655 Sep 10 j 10:41	19°mp37'36	2°07'45
opposition	649 Dec 24 j 10:17	6°♄04'19	0°-17'-2	max. Earth dist.	655 Sep 10 j 13:19	19°mp38'24	10.62740 AU
min. Earth dist.	649 Dec 24 j 03:37	6°♄05'41	8.04776 AU	morning rise	655 Sep 27 j 12:49	21°mp42'21	
direct	650 Mar 01 j 15:09	2°♄34'52		retrograde	656 Jan 05 j 06:03	29°mp00'13	
asc. node	650 May 27 j 05:53	8°♄28'54		opposition	656 Mar 13 j 04:49	25°mp40'25	2°43'09
evening set	650 Jun 15 j 10:23	10°♄50'08		min. Earth dist.	656 Mar 13 j 02:09	25°mp40'56	8.68804 AU
				direct	656 May 22 j 16:17	22°mp15'05	
conjunction	650 Jul 03 j 14:47	13°♄10'27	0°03'23	evening set	656 Sep 04 j 23:45	29°mp49'44	
minimum elong	650 Jul 03 j 14:46	13°♄10'27	0°03'23		656 Sep 06 j 10:19	0°♄	
behind sun begin	650 Jul 03 j 07:28	13°♄08'06					
behind sun end	650 Jul 03 j 22:05	13°♄12'47		conjunction	656 Sep 22 j 01:59	1°♄53'07	2°16'08
max. Earth dist.	650 Jul 03 j 23:05	13°♄13'07	10.08215 AU	minimum elong	656 Sep 22 j 01:58	1°♄53'07	2°16'08
morning rise	650 Jul 21 j 17:02	15°♄30'03		max. Earth dist.	656 Sep 22 j 03:56	1°♄53'43	10.74447 AU
retrograde	650 Nov 01 j 23:45	23°♄33'29		morning rise	656 Oct 08 j 23:32	3°♄55'08	
opposition	651 Jan 07 j 11:17	20°♄06'56	0°24'42	retrograde	657 Jan 16 j 10:27	11°♄05'48	
min. Earth dist.	651 Jan 07 j 04:38	20°♄08'18	8.12164 AU	opposition	657 Mar 25 j 19:21	7°♄46'58	2°49'18
direct	651 Mar 16 j 04:54	16°♄37'34		min. Earth dist.	657 Mar 25 j 17:52	7°♄47'15	8.80077 AU
evening set	651 Jun 30 j 08:28	24°♄49'02		direct	657 Jun 04 j 15:06	4°♄22'50	
				evening set	657 Sep 17 j 09:31	11°♄49'17	
conjunction	651 Jul 18 j 10:23	27°♄07'16	0°36'16				
minimum elong	651 Jul 18 j 10:21	27°♄07'15	0°36'15	conjunction	657 Oct 04 j 07:45	13°♄50'13	2°18'20
max. Earth dist.	651 Jul 18 j 18:20	27°♄09'49	10.16668 AU	minimum elong	657 Oct 04 j 07:45	13°♄50'13	2°18'20
morning rise	651 Aug 05 j 08:56	29°♄24'27		max. Earth dist.	657 Oct 04 j 08:35	13°♄50'28	10.85123 AU
	651 Aug 10 j 02:59	0°♄		morning rise	657 Oct 21 j 01:38	15°♄49'56	
retrograde	651 Nov 15 j 17:17	7°♄18'37		retrograde	658 Jan 28 j 08:31	22°♄54'40	
opposition	652 Jan 21 j 07:25	3°♄53'30	1°04'09	opposition	658 Apr 07 j 05:14	19°♄36'36	2°48'04
min. Earth dist.	652 Jan 21 j 01:15	3°♄54'46	8.21564 AU	min. Earth dist.	658 Apr 07 j 05:29	19°♄36'33	8.90092 AU
direct	652 Mar 29 j 14:22	0°♄24'31		direct	658 Jun 17 j 07:29	16°♄13'37	
evening set	652 Jul 13 j 22:35	8°♄30'33		evening set	658 Sep 29 j 10:13	23°♄32'28	
conjunction	652 Jul 31 j 20:37	10°♄46'06	1°06'31	conjunction	658 Oct 16 j 05:06	25°♄31'25	2°14'40
minimum elong	652 Jul 31 j 20:34	10°♄46'05	1°06'30	minimum elong	658 Oct 16 j 05:07	25°♄31'25	2°14'41
max. Earth dist.	652 Aug 01 j 03:52	10°♄48'24	10.26889 AU	max. Earth dist.	658 Oct 16 j 03:59	25°♄31'05	10.94350 AU
morning rise	652 Aug 18 j 14:27	13°♄00'21		morning rise	658 Nov 01 j 20:24	27°♄29'19	
	652 Sep 04 j 02:49	15°♄			658 Nov 24 j 10:39	0°♄	
retrograde	652 Nov 28 j 03:04	20°♄44'56		retrograde	659 Feb 09 j 02:53	4°♄29'28	
opposition	653 Feb 02 j 21:57	17°♄21'18	1°39'04	opposition	659 Apr 19 j 11:00	1°♄11'57	2°39'59
min. Earth dist.	653 Feb 02 j 16:57	17°♄22'18	8.32508 AU	min. Earth dist.	659 Apr 19 j 12:46	1°♄11'37	8.98465 AU
	653 Mar 07 j 06:58	15°♄			659 May 05 j 21:02	30°♄	
direct	653 Apr 12 j 18:24	13°♄52'57		direct	659 Jun 29 j 17:58	27°♄50'07	
	653 May 19 j 01:29	15°♄			659 Aug 21 j 19:31	0°♄	
evening set	653 Jul 28 j 03:19	21°♄52'12		evening set	659 Oct 11 j 03:27	5°♄02'14	
conjunction	653 Aug 14 j 20:29	24°♄04'41	1°32'31	conjunction	659 Oct 27 j 19:54	6°♄59'40	2°05'37
minimum elong	653 Aug 14 j 20:26	24°♄04'40	1°32'30	minimum elong	659 Oct 27 j 19:56	6°♄59'41	2°05'37
max. Earth dist.	653 Aug 15 j 02:06	24°♄06'27	10.38366 AU	max. Earth dist.	659 Oct 27 j 17:01	6°♄58'49	11.01791 AU
morning rise	653 Sep 01 j 09:00	26°♄15'43		morning rise	659 Nov 13 j 09:33	8°♄56'17	
	653 Oct 04 j 02:26	0°♄			660 Jan 19 j 00:22	15°♄	
retrograde	653 Dec 11 j 04:26	3°♄50'45		retrograde	660 Feb 20 j 18:08	15°♄53'18	
opposition	654 Feb 16 j 06:19	0°♄28'33	2°07'48		660 Mar 25 j 05:58	15°♄	
min. Earth dist.	654 Feb 16 j 02:30	0°♄29'19	8.44436 AU	opposition	660 Apr 30 j 13:19	12°♄36'05	2°25'42
	654 Feb 22 j 06:55	30°♄		min. Earth dist.	660 Apr 30 j 15:39	12°♄35'39	9.04889 AU
direct	654 Apr 26 j 16:09	27°♄01'03		direct	660 Jul 10 j 22:36	9°♄15'19	
	654 Jun 27 j 00:01	0°♄			660 Oct 09 j 12:06	15°♄	
evening set	654 Aug 10 j 21:20	4°♄52'32		evening set	660 Oct 21 j 14:47	16°♄21'50	



conjunction	660 Nov 07 j 05:45	18° <del>M</del> 18'14	1°51'44	conjunction	667 Jan 13 j 03:14	25° <del>3</del> 58'48	0°-33'-36
minimum elong	660 Nov 07 j 05:47	18° <del>M</del> 18'15	1°51'43	minimum elong	667 Jan 13 j 03:13	25° <del>3</del> 58'48	0°33'38
max. Earth dist.	660 Nov 07 j 02:26	18° <del>M</del> 17'15	11.07170 AU	max. Earth dist.	667 Jan 12 j 20:19	25° <del>3</del> 56'44	10.91157 AU
morning rise	660 Nov 23 j 18:26	20° <del>M</del> 14'02		morning rise	667 Jan 29 j 22:46	27° <del>3</del> 58'44	
retrograde	661 Mar 03 j 10:45	27° <del>M</del> 09'27			667 Feb 16 j 18:58	0° <del>≈</del>	
opposition	661 May 12 j 13:39	23° <del>M</del> 52'21	2°05'58	retrograde	667 May 13 j 11:00	5° <del>≈</del> 17'19	
min. Earth dist.	661 May 12 j 16:28	23° <del>M</del> 51'49	9.09128 AU	opposition	667 Jul 23 j 07:35	1° <del>≈</del> 56'01	0°-57'-57
direct	661 Jul 22 j 23:07	20° <del>M</del> 32'33		min. Earth dist.	667 Jul 23 j 13:12	1° <del>≈</del> 54'57	8.86396 AU
evening set	661 Nov 01 j 21:54	27° <del>M</del> 34'39			667 Aug 19 j 20:37	30° <del>R</del> <del>3</del>	
				direct	667 Sep 30 j 14:55	28° <del>3</del> 37'31	
conjunction	661 Nov 18 j 12:00	29° <del>M</del> 30'31	1°33'39		667 Nov 10 j 05:42	0° <del>≈</del>	
minimum elong	661 Nov 18 j 12:02	29° <del>M</del> 30'32	1°33'38	evening set	668 Jan 08 j 06:03	5° <del>≈</del> 44'38	
max. Earth dist.	661 Nov 18 j 08:04	29° <del>M</del> 29'22	11.10291 AU				
	661 Nov 22 j 16:35	0° <del>≈</del>		conjunction	668 Jan 25 j 00:27	7° <del>≈</del> 45'23	-1°00'-13
morning rise	661 Dec 05 j 00:27	1° <del>≈</del> 25'58		minimum elong	668 Jan 25 j 00:25	7° <del>≈</del> 45'22	1°00'15
retrograde	662 Mar 15 j 02:04	8° <del>≈</del> 21'21		max. Earth dist.	668 Jan 24 j 17:32	7° <del>≈</del> 43'18	10.81300 AU
opposition	662 May 24 j 13:04	5° <del>≈</del> 04'08	1°41'35	morning rise	668 Feb 10 j 22:22	9° <del>≈</del> 47'12	
min. Earth dist.	662 May 24 j 17:01	5° <del>≈</del> 03'25	9.11044 AU		668 Apr 01 j 18:10	15° <del>≈</del>	
direct	662 Aug 03 j 17:38	1° <del>≈</del> 45'08		retrograde	668 May 25 j 05:15	17° <del>≈</del> 14'32	
evening set	662 Nov 13 j 02:51	8° <del>≈</del> 44'15			668 Jul 19 j 15:14	15° <del>R</del> <del>≈</del>	
				opposition	668 Aug 03 j 22:30	13° <del>≈</del> 51'51	-1°-29'-43
conjunction	662 Nov 29 j 16:31	10° <del>≈</del> 39'58	1°12'03	min. Earth dist.	668 Aug 04 j 03:58	13° <del>≈</del> 50'49	8.75830 AU
minimum elong	662 Nov 29 j 16:33	10° <del>≈</del> 39'59	1°12'04	direct	668 Oct 11 j 18:40	10° <del>≈</del> 32'41	
max. Earth dist.	662 Nov 29 j 10:55	10° <del>≈</del> 38'20	11.11057 AU		668 Dec 26 j 01:10	15° <del>≈</del>	
morning rise	662 Dec 16 j 05:37	12° <del>≈</del> 35'33		evening set	669 Jan 19 j 09:19	17° <del>≈</del> 45'58	
retrograde	663 Mar 26 j 18:30	19° <del>≈</del> 32'30					
opposition	663 Jun 05 j 12:27	16° <del>≈</del> 14'55	1°13'24	conjunction	669 Feb 05 j 05:52	19° <del>≈</del> 48'43	-1°-24'-46
min. Earth dist.	663 Jun 05 j 17:46	16° <del>≈</del> 13'56	9.10584 AU	minimum elong	669 Feb 05 j 05:50	19° <del>≈</del> 48'43	1°24'47
direct	663 Aug 15 j 12:01	12° <del>≈</del> 56'28		max. Earth dist.	669 Feb 05 j 00:06	19° <del>≈</del> 46'58	10.70081 AU
evening set	663 Nov 24 j 07:08	19° <del>≈</del> 54'06		morning rise	669 Feb 22 j 06:20	21° <del>≈</del> 52'43	
				retrograde	669 Jun 07 j 09:38	29° <del>≈</del> 29'42	
conjunction	663 Dec 10 j 21:00	21° <del>≈</del> 50'06	0°47'42	opposition	669 Aug 16 j 19:07	26° <del>≈</del> 05'33	-1°-58'-19
minimum elong	663 Dec 10 j 21:02	21° <del>≈</del> 50'07	0°47'42	min. Earth dist.	669 Aug 16 j 23:35	26° <del>≈</del> 04'41	8.64108 AU
max. Earth dist.	663 Dec 10 j 14:30	21° <del>≈</del> 48'12	11.09440 AU	direct	669 Oct 24 j 02:38	22° <del>≈</del> 45'31	
morning rise	663 Dec 27 j 11:14	23° <del>≈</del> 46'14		evening set	670 Jan 31 j 21:33	0° <del>≈</del> 06'11	
	664 Mar 06 j 14:48	0° <del>≈</del>			670 Jan 31 j 01:05	0° <del>≈</del>	
retrograde	664 Apr 06 j 15:13	0° <del>≈</del> 46'19					
	664 May 08 j 05:04	30° <del>R</del> <del>≈</del>		conjunction	670 Feb 17 j 20:43	2° <del>≈</del> 11'15	-1°-45'-59
opposition	664 Jun 16 j 12:54	27° <del>≈</del> 28'07	0°42'19	minimum elong	670 Feb 17 j 20:40	2° <del>≈</del> 11'14	1°45'59
min. Earth dist.	664 Jun 16 j 18:24	27° <del>≈</del> 27'07	9.07751 AU	max. Earth dist.	670 Feb 17 j 15:47	2° <del>≈</del> 09'43	10.57897 AU
direct	664 Aug 26 j 05:50	24° <del>≈</del> 10'02		morning rise	670 Mar 07 j 00:07	4° <del>≈</del> 17'42	
	664 Nov 24 j 13:49	0° <del>≈</del>		retrograde	670 Jun 20 j 22:27	12° <del>≈</del> 04'54	
evening set	664 Dec 04 j 12:36	1° <del>≈</del> 07'41		opposition	670 Aug 29 j 21:55	8° <del>≈</del> 39'15	-2°-22'-9
				min. Earth dist.	670 Aug 30 j 01:20	8° <del>≈</del> 38'36	8.51656 AU
conjunction	664 Dec 21 j 03:11	3° <del>≈</del> 04'22	0°21'23	direct	670 Nov 05 j 15:40	5° <del>≈</del> 18'10	
minimum elong	664 Dec 21 j 03:12	3° <del>≈</del> 04'22	0°21'23	evening set	671 Feb 13 j 20:09	12° <del>≈</del> 47'26	
max. Earth dist.	664 Dec 20 j 21:02	3° <del>≈</del> 02'34	11.05477 AU				
morning rise	665 Jan 06 j 18:44	5° <del>≈</del> 01'24		conjunction	671 Mar 02 j 22:19	14° <del>≈</del> 55'03	-2°-2'-36
retrograde	665 Apr 18 j 15:29	12° <del>≈</del> 06'14		minimum elong	671 Mar 02 j 22:17	14° <del>≈</del> 55'02	2°02'36
opposition	665 Jun 28 j 15:34	8° <del>≈</del> 47'11	0°09'19	max. Earth dist.	671 Mar 02 j 17:39	14° <del>≈</del> 53'35	10.45256 AU
min. Earth dist.	665 Jun 28 j 20:39	8° <del>≈</del> 46'14	9.02639 AU	morning rise	671 Mar 20 j 05:09	17° <del>≈</del> 04'10	
direct	665 Sep 06 j 23:08	5° <del>≈</del> 29'13		retrograde	671 Jul 04 j 18:30	25° <del>≈</del> 01'36	
desc. node	665 Oct 11 j 00:20	6° <del>≈</del> 26'09		opposition	671 Sep 12 j 07:07	21° <del>≈</del> 34'35	-2°-39'-37
evening set	665 Dec 15 j 21:12	12° <del>≈</del> 28'28		min. Earth dist.	671 Sep 12 j 09:50	21° <del>≈</del> 34'03	8.39075 AU
				direct	671 Nov 18 j 13:10	18° <del>≈</del> 12'16	
conjunction	666 Jan 01 j 12:45	14° <del>≈</del> 26'11	0°-6'-6	evening set	672 Feb 27 j 05:30	25° <del>≈</del> 50'49	
minimum elong	666 Jan 01 j 12:45	14° <del>≈</del> 26'11	0°06'07				
behind sun begin	666 Jan 01 j 06:07	14° <del>≈</del> 24'14		conjunction	672 Mar 15 j 11:16	28° <del>≈</del> 01'12	-2°-13'-22
behind sun end	666 Jan 01 j 19:23	14° <del>≈</del> 28'08		minimum elong	672 Mar 15 j 11:15	28° <del>≈</del> 01'12	2°13'22
max. Earth dist.	666 Jan 01 j 06:40	14° <del>≈</del> 24'24	10.99309 AU	max. Earth dist.	672 Mar 15 j 07:20	27° <del>≈</del> 59'57	10.32852 AU
morning rise	666 Jan 18 j 06:03	16° <del>≈</del> 24'28			672 Mar 31 j 03:46	0° <del>≈</del>	
retrograde	666 Apr 30 j 22:45	23° <del>≈</del> 35'31		morning rise	672 Apr 01 j 21:58	0° <del>≈</del> 13'08	
opposition	666 Jul 10 j 21:30	20° <del>≈</del> 15'26	0°-24'-29	retrograde	672 Jul 17 j 22:24	8° <del>≈</del> 20'05	
min. Earth dist.	666 Jul 11 j 02:37	20° <del>≈</del> 14'29	8.95437 AU	opposition	672 Sep 24 j 22:53	4° <del>≈</del> 51'50	-2°-49'-11
direct	666 Sep 18 j 18:08	16° <del>≈</del> 57'20		min. Earth dist.	672 Sep 25 j 00:47	4° <del>≈</del> 51'27	8.27099 AU
evening set	666 Dec 27 j 10:28	23° <del>≈</del> 59'44		direct	672 Nov 30 j 18:40	1° <del>≈</del> 28'11	
				evening set	673 Mar 12 j 01:37	9° <del>≈</del> 16'06	



conjunction	673 Mar 29 j 11:39	11° $\Upsilon$ 29'20	-2°-17'-12	min. Earth dist.	678 Dec 17 j 20:41	29° $\Pi$ 34'40	8.01262 AU
minimum elong	673 Mar 29 j 11:40	11° $\Upsilon$ 29'20	2°17'13	direct	679 Feb 23 j 01:35	26° $\Pi$ 03'38	
max. Earth dist.	673 Mar 29 j 09:26	11° $\Upsilon$ 28'37	10.21429 AU		679 May 02 j 17:46	0° $\Theta$	
morning rise	673 Apr 16 j 02:29	13° $\Upsilon$ 44'05		evening set	679 Jun 08 j 15:02	4° $\Theta$ 20'04	
retrograde	673 Aug 01 j 08:30	21° $\Upsilon$ 59'06					
opposition	673 Oct 08 j 20:29	18° $\Upsilon$ 29'48	-2°-49'-36	conjunction	679 Jun 26 j 19:58	6° $\Theta$ 41'11	0°-12'-52
min. Earth dist.	673 Oct 08 j 21:13	18° $\Upsilon$ 29'40	8.16448 AU	minimum elong	679 Jun 26 j 19:59	6° $\Theta$ 41'11	0°12'53
direct	673 Dec 14 j 08:49	15° $\Upsilon$ 04'47		behind sun begin	679 Jun 26 j 15:36	6° $\Theta$ 39'47	
evening set	674 Mar 26 j 08:22	23° $\Upsilon$ 01'37		behind sun end	679 Jun 27 j 00:22	6° $\Theta$ 42'36	
				max. Earth dist.	679 Jun 27 j 03:22	6° $\Theta$ 43'34	10.03882 AU
conjunction	674 Apr 12 j 23:07	25° $\Upsilon$ 17'37	-2°-13'-22	morning rise	679 Jul 14 j 23:31	9° $\Theta$ 01'49	
minimum elong	674 Apr 12 j 23:09	25° $\Upsilon$ 17'38	2°13'23	retrograde	679 Oct 26 j 17:37	17° $\Theta$ 09'41	
max. Earth dist.	674 Apr 12 j 23:21	25° $\Upsilon$ 17'42	10.11681 AU	asc. node	679 Nov 18 j 16:32	16° $\Theta$ 40'17	
morning rise	674 Apr 30 j 18:06	27° $\Upsilon$ 35'00		opposition	680 Jan 01 j 05:11	13° $\Theta$ 41'57	0°04'49
	674 May 20 j 10:52	0° $\Xi$		min. Earth dist.	679 Dec 31 j 23:32	13° $\Theta$ 43'07	8.07167 AU
retrograde	674 Aug 15 j 22:59	5° $\Xi$ 55'49		direct	680 Mar 08 j 16:58	10° $\Theta$ 11'55	
opposition	674 Oct 22 j 22:43	2° $\Xi$ 25'49	-2°-40'-8	evening set	680 Jun 22 j 15:53	18° $\Theta$ 25'39	
min. Earth dist.	674 Oct 22 j 21:42	2° $\Xi$ 26'02	8.07772 AU				
	674 Nov 24 j 22:40	30° $\Re$ $\Upsilon$		conjunction	680 Jul 10 j 19:08	20° $\Theta$ 45'05	0°20'41
direct	674 Dec 28 j 07:09	28° $\Upsilon$ 59'28		minimum elong	680 Jul 10 j 19:07	20° $\Theta$ 45'04	0°20'40
	675 Jan 30 j 05:51	0° $\Xi$		max. Earth dist.	680 Jul 11 j 02:23	20° $\Theta$ 47'24	10.11117 AU
evening set	675 Apr 10 j 00:22	7° $\Xi$ 04'10		morning rise	680 Jul 28 j 19:50	23° $\Theta$ 03'39	
					680 Oct 05 j 20:16	0° $\Omega$	
conjunction	675 Apr 27 j 19:52	9° $\Xi$ 22'38	-2°-1'-35	retrograde	680 Nov 08 j 13:36	1° $\Omega$ 02'37	
minimum elong	675 Apr 27 j 19:56	9° $\Xi$ 22'39	2°01'36		680 Dec 12 j 16:01	30° $\Re$ $\Theta$	
max. Earth dist.	675 Apr 27 j 22:36	9° $\Xi$ 23'32	10.04213 AU	opposition	681 Jan 14 j 03:33	27° $\Theta$ 36'15	0°45'40
morning rise	675 May 15 j 18:45	11° $\Xi$ 42'14		min. Earth dist.	681 Jan 13 j 21:46	27° $\Theta$ 37'26	8.15586 AU
	675 Jun 11 j 22:30	15° $\Xi$		direct	681 Mar 23 j 04:53	24° $\Theta$ 06'27	
retrograde	675 Aug 30 j 15:57	20° $\Xi$ 06'08			681 Jun 18 j 18:21	0° $\Omega$	
opposition	675 Nov 06 j 04:33	16° $\Xi$ 35'49	-2°-20'-49	evening set	681 Jul 07 j 09:58	2° $\Omega$ 15'31	
min. Earth dist.	675 Nov 06 j 01:38	16° $\Xi$ 36'25	8.01615 AU				
	675 Nov 26 j 07:03	15° $\Re$ $\Xi$		conjunction	681 Jul 25 j 10:01	4° $\Omega$ 32'32	0°52'26
direct	676 Jan 11 j 11:54	13° $\Xi$ 08'15		minimum elong	681 Jul 25 j 09:58	4° $\Omega$ 32'31	0°52'25
	676 Feb 25 j 18:26	15° $\Xi$		max. Earth dist.	681 Jul 25 j 16:55	4° $\Omega$ 34'44	10.20593 AU
evening set	676 Apr 23 j 23:33	21° $\Xi$ 19'08		morning rise	681 Aug 12 j 06:30	6° $\Omega$ 48'22	
				retrograde	681 Nov 22 j 03:02	14° $\Omega$ 37'47	
conjunction	676 May 11 j 23:20	23° $\Xi$ 39'34	-1°-42'-17	opposition	682 Jan 27 j 20:37	11° $\Omega$ 12'54	1°23'00
minimum elong	676 May 11 j 23:24	23° $\Xi$ 39'35	1°42'18	min. Earth dist.	682 Jan 27 j 14:33	11° $\Omega$ 14'08	8.25979 AU
max. Earth dist.	676 May 12 j 04:19	23° $\Xi$ 41'12	9.99507 AU	direct	682 Apr 06 j 11:34	7° $\Omega$ 43'42	
morning rise	676 May 30 j 01:25	26° $\Xi$ 00'46			682 Jul 15 j 11:16	15° $\Omega$	
	676 Jul 02 j 08:15	0° $\Pi$		evening set	682 Jul 21 j 19:11	15° $\Omega$ 46'31	
retrograde	676 Sep 13 j 09:41	4° $\Pi$ 24'44					
opposition	676 Nov 19 j 12:16	0° $\Pi$ 54'29	-1°-52'-34	conjunction	682 Aug 08 j 14:51	18° $\Omega$ 00'36	1°20'37
min. Earth dist.	676 Nov 19 j 07:46	0° $\Pi$ 55'25	7.98376 AU	minimum elong	682 Aug 08 j 14:48	18° $\Omega$ 00'35	1°20'37
	676 Nov 30 j 13:58	30° $\Re$ $\Xi$		max. Earth dist.	682 Aug 08 j 21:36	18° $\Omega$ 02'44	10.31726 AU
direct	677 Jan 24 j 21:09	27° $\Xi$ 25'53		morning rise	682 Aug 26 j 06:07	20° $\Omega$ 13'18	
	677 Mar 19 j 17:14	0° $\Pi$		retrograde	682 Dec 05 j 08:34	27° $\Omega$ 53'05	
evening set	677 May 09 j 03:47	5° $\Pi$ 40'55		opposition	683 Feb 10 j 07:47	24° $\Omega$ 29'44	1°54'50
				min. Earth dist.	683 Feb 10 j 01:57	24° $\Omega$ 30'54	8.37734 AU
conjunction	677 May 27 j 06:53	8° $\Pi$ 02'33	-1°-16'-31	direct	683 Apr 20 j 12:01	21° $\Omega$ 01'27	
minimum elong	677 May 27 j 06:57	8° $\Pi$ 02'34	1°16'32	evening set	683 Aug 04 j 18:11	28° $\Omega$ 56'52	
max. Earth dist.	677 May 27 j 13:28	8° $\Pi$ 04'42	9.97860 AU		683 Aug 13 j 07:09	0° $\mp$	
morning rise	677 Jun 14 j 11:05	10° $\Pi$ 24'32					
retrograde	677 Sep 28 j 01:46	18° $\Pi$ 45'32		conjunction	683 Aug 22 j 08:50	1° $\mp$ 07'47	1°43'55
opposition	677 Dec 03 j 19:59	15° $\Pi$ 15'47	-1°-17'-9	minimum elong	683 Aug 22 j 08:46	1° $\mp$ 07'46	1°43'54
min. Earth dist.	677 Dec 03 j 14:39	15° $\Pi$ 16'53	7.98261 AU	max. Earth dist.	683 Aug 22 j 15:13	1° $\mp$ 09'46	10.43891 AU
direct	678 Feb 08 j 10:21	11° $\Pi$ 46'23		morning rise	683 Sep 08 j 18:33	3° $\mp$ 17'13	
evening set	678 May 24 j 10:04	20° $\Pi$ 03'19		retrograde	683 Dec 18 j 05:30	10° $\mp$ 47'41	
				opposition	684 Feb 23 j 12:50	7° $\mp$ 25'53	2°19'52
conjunction	678 Jun 11 j 14:59	22° $\Pi$ 25'11	0°-46'00	min. Earth dist.	684 Feb 23 j 08:07	7° $\mp$ 26'48	8.50213 AU
minimum elong	678 Jun 11 j 15:01	22° $\Pi$ 25'12	0°46'01	direct	684 May 03 j 06:02	3° $\mp$ 58'42	
max. Earth dist.	678 Jun 11 j 22:15	22° $\Pi$ 27'33	9.99360 AU	evening set	684 Aug 17 j 06:17	11° $\mp$ 46'02	
morning rise	678 Jun 29 j 19:44	24° $\Pi$ 46'59					
	678 Aug 14 j 08:33	0° $\Theta$		conjunction	684 Sep 03 j 15:42	13° $\mp$ 53'46	2°01'27
retrograde	678 Oct 12 j 13:11	3° $\Theta$ 02'25		minimum elong	684 Sep 03 j 15:39	13° $\mp$ 53'46	2°01'27
	678 Dec 12 j 18:15	30° $\Re$ $\Pi$		max. Earth dist.	684 Sep 03 j 20:42	13° $\mp$ 55'19	10.56447 AU
opposition	678 Dec 18 j 02:11	29° $\Pi$ 33'31	0°-37'-4	morning rise	684 Sep 20 j 20:08	16° $\mp$ 00'02	



retrograde	684 Dec 29 j 19:24	23° $\mathring{M}$ 21'53		opposition	691 May 19 j 07:56	0° $\mathring{Z}$ 05'28	1°53'25
opposition	685 Mar 07 j 11:57	20° $\mathring{M}$ 01'31	2°37'23	min. Earth dist.	691 May 19 j 12:28	0° $\mathring{Z}$ 04'38	9.11003 AU
min. Earth dist.	685 Mar 07 j 08:50	20° $\mathring{M}$ 02'08	8.62768 AU		691 May 20 j 13:44	30° $\mathring{R}$ $\mathring{M}$	
direct	685 May 16 j 16:26	16° $\mathring{M}$ 35'37		direct	691 Jul 29 j 14:18	26° $\mathring{M}$ 46'29	
evening set	685 Aug 30 j 07:35	24° $\mathring{M}$ 14'34			691 Oct 03 j 04:10	0° $\mathring{Z}$	
				evening set	691 Nov 08 j 07:01	3° $\mathring{Z}$ 47'05	
conjunction	685 Sep 16 j 11:56	26° $\mathring{M}$ 19'19	2°12'48				
minimum elong	685 Sep 16 j 11:54	26° $\mathring{M}$ 19'18	2°12'48	conjunction	691 Nov 24 j 20:53	5° $\mathring{Z}$ 42'50	1°22'28
max. Earth dist.	685 Sep 16 j 14:51	26° $\mathring{M}$ 20'12	10.68773 AU	minimum elong	691 Nov 24 j 20:55	5° $\mathring{Z}$ 42'51	1°22'28
morning rise	685 Oct 03 j 11:38	28° $\mathring{M}$ 22'39		max. Earth dist.	691 Nov 24 j 15:07	5° $\mathring{Z}$ 41'09	11.11401 AU
	685 Oct 17 j 10:13	0° $\mathring{Z}$		morning rise	691 Dec 11 j 09:38	7° $\mathring{Z}$ 38'20	
retrograde	686 Jan 11 j 01:35	5° $\mathring{Z}$ 36'49		retrograde	692 Mar 20 j 17:36	14° $\mathring{Z}$ 34'35	
opposition	686 Mar 20 j 05:24	2° $\mathring{Z}$ 17'43	2°47'09	opposition	692 May 30 j 07:28	11° $\mathring{Z}$ 17'31	1°26'54
min. Earth dist.	686 Mar 20 j 03:31	2° $\mathring{Z}$ 18'04	8.74804 AU	min. Earth dist.	692 May 30 j 12:26	11° $\mathring{Z}$ 16'36	9.11314 AU
	686 Apr 22 j 04:41	30° $\mathring{R}$ $\mathring{M}$		direct	692 Aug 09 j 10:30	7° $\mathring{Z}$ 59'06	
direct	686 May 29 j 19:56	28° $\mathring{M}$ 53'11		evening set	692 Nov 18 j 12:01	14° $\mathring{Z}$ 57'35	
	686 Jul 06 j 01:21	0° $\mathring{Z}$					
evening set	686 Sep 11 j 22:24	6° $\mathring{Z}$ 23'48		conjunction	692 Dec 05 j 01:53	16° $\mathring{Z}$ 53'28	0°59'18
				minimum elong	692 Dec 05 j 01:55	16° $\mathring{Z}$ 53'29	0°59'19
conjunction	686 Sep 28 j 22:21	8° $\mathring{Z}$ 25'53	2°17'54	max. Earth dist.	692 Dec 04 j 19:30	16° $\mathring{Z}$ 51'36	11.10495 AU
minimum elong	686 Sep 28 j 22:21	8° $\mathring{Z}$ 25'53	2°17'55	morning rise	692 Dec 21 j 15:23	18° $\mathring{Z}$ 49'19	
max. Earth dist.	686 Sep 28 j 23:30	8° $\mathring{Z}$ 26'14	10.80321 AU	retrograde	693 Apr 01 j 13:53	25° $\mathring{Z}$ 48'03	
morning rise	686 Oct 15 j 18:05	10° $\mathring{Z}$ 26'42		opposition	693 Jun 11 j 07:55	22° $\mathring{Z}$ 30'21	0°57'03
retrograde	687 Jan 23 j 01:59	17° $\mathring{Z}$ 34'22		min. Earth dist.	693 Jun 11 j 13:51	22° $\mathring{Z}$ 29'15	9.09140 AU
opposition	687 Apr 01 j 17:45	14° $\mathring{Z}$ 16'15	2°49'21	direct	693 Aug 21 j 03:53	19° $\mathring{Z}$ 12'14	
min. Earth dist.	687 Apr 01 j 16:26	14° $\mathring{Z}$ 16'30	8.85792 AU	evening set	693 Nov 29 j 17:16	26° $\mathring{Z}$ 10'03	
direct	687 Jun 11 j 17:08	10° $\mathring{Z}$ 53'05					
evening set	687 Sep 24 j 03:34	18° $\mathring{Z}$ 15'45		conjunction	693 Dec 16 j 07:27	28° $\mathring{Z}$ 06'27	0°33'47
				minimum elong	693 Dec 16 j 07:28	28° $\mathring{Z}$ 06'27	0°33'48
conjunction	687 Oct 11 j 00:02	20° $\mathring{Z}$ 15'37	2°16'58	max. Earth dist.	693 Dec 15 j 23:38	28° $\mathring{Z}$ 04'09	11.07158 AU
minimum elong	687 Oct 11 j 00:03	20° $\mathring{Z}$ 15'37	2°16'58	morning rise	694 Jan 01 j 22:20	0° $\mathring{Z}$ 03'06	
max. Earth dist.	687 Oct 11 j 00:28	20° $\mathring{Z}$ 15'45	10.90595 AU		694 Jan 01 j 11:35	0° $\mathring{Z}$	
morning rise	687 Oct 27 j 16:34	22° $\mathring{Z}$ 14'21		retrograde	694 Apr 13 j 11:06	7° $\mathring{Z}$ 05'52	
retrograde	688 Feb 04 j 00:38	29° $\mathring{Z}$ 16'46		opposition	694 Jun 23 j 10:04	3° $\mathring{Z}$ 47'15	0°24'48
opposition	688 Apr 13 j 01:38	25° $\mathring{Z}$ 59'25	2°44'25	min. Earth dist.	694 Jun 23 j 16:59	3° $\mathring{Z}$ 45'58	9.04608 AU
min. Earth dist.	688 Apr 13 j 01:21	25° $\mathring{Z}$ 59'28	8.95263 AU	direct	694 Sep 01 j 21:02	0° $\mathring{Z}$ 29'08	
direct	688 Jun 23 j 06:28	22° $\mathring{Z}$ 37'32		evening set	694 Dec 11 j 00:39	7° $\mathring{Z}$ 27'53	
evening set	688 Oct 05 j 00:45	29° $\mathring{Z}$ 52'58					
	688 Oct 06 j 01:01	0° $\mathring{M}$		conjunction	694 Dec 27 j 15:38	9° $\mathring{Z}$ 25'10	0°06'47
				minimum elong	694 Dec 27 j 15:39	9° $\mathring{Z}$ 25'10	0°06'47
conjunction	688 Oct 21 j 18:27	1° $\mathring{M}$ 51'05	2°10'24	behind sun begin	694 Dec 27 j 09:08	9° $\mathring{Z}$ 23'16	
minimum elong	688 Oct 21 j 18:29	1° $\mathring{M}$ 51'06	2°10'23	behind sun end	694 Dec 27 j 22:09	9° $\mathring{Z}$ 27'05	
max. Earth dist.	688 Oct 21 j 17:45	1° $\mathring{M}$ 50'52	10.99156 AU	max. Earth dist.	694 Dec 27 j 07:16	9° $\mathring{Z}$ 22'43	11.01534 AU
morning rise	688 Nov 07 j 08:41	3° $\mathring{M}$ 48'15		morning rise	695 Jan 13 j 08:17	11° $\mathring{Z}$ 22'57	
retrograde	689 Feb 14 j 17:38	10° $\mathring{M}$ 46'44		desc. node	695 Mar 29 j 13:19	17° $\mathring{Z}$ 55'54	
opposition	689 Apr 25 j 05:57	7° $\mathring{M}$ 29'54	2°32'58	retrograde	695 Apr 25 j 14:37	18° $\mathring{Z}$ 31'18	
min. Earth dist.	689 Apr 25 j 07:35	7° $\mathring{M}$ 29'35	9.02823 AU	opposition	695 Jul 05 j 14:37	15° $\mathring{Z}$ 11'30	0°-8'-47
direct	689 Jul 05 j 12:44	4° $\mathring{M}$ 09'09		min. Earth dist.	695 Jul 05 j 21:42	15° $\mathring{Z}$ 10'12	8.97895 AU
evening set	689 Oct 16 j 15:20	11° $\mathring{M}$ 18'21		direct	695 Sep 13 j 17:08	11° $\mathring{Z}$ 53'09	
				evening set	695 Dec 22 j 11:45	18° $\mathring{Z}$ 54'24	
conjunction	689 Nov 02 j 06:55	13° $\mathring{M}$ 15'11	1°58'43				
minimum elong	689 Nov 02 j 06:57	13° $\mathring{M}$ 15'12	1°58'42	conjunction	696 Jan 08 j 04:03	20° $\mathring{Z}$ 52'57	0°-20'-54
max. Earth dist.	689 Nov 02 j 03:51	13° $\mathring{M}$ 14'17	11.05649 AU	minimum elong	696 Jan 08 j 04:02	20° $\mathring{Z}$ 52'57	0°20'56
	689 Nov 17 j 04:49	15° $\mathring{M}$		max. Earth dist.	696 Jan 07 j 20:31	20° $\mathring{Z}$ 50'43	10.93822 AU
morning rise	689 Nov 18 j 19:55	15° $\mathring{M}$ 11'18		morning rise	696 Jan 24 j 22:32	22° $\mathring{Z}$ 52'13	
retrograde	690 Feb 26 j 09:14	22° $\mathring{M}$ 07'24			696 Apr 24 j 13:49	0° $\approx$	
opposition	690 May 07 j 07:47	18° $\mathring{M}$ 50'47	2°15'43	retrograde	696 May 07 j 00:15	0° $\approx$ 07'36	
min. Earth dist.	690 May 07 j 11:21	18° $\mathring{M}$ 50'07	9.08149 AU		696 May 19 j 12:23	30° $\mathring{R}$ $\mathring{Z}$	
direct	690 Jul 17 j 15:49	15° $\mathring{M}$ 31'00		opposition	696 Jul 16 j 22:51	26° $\mathring{Z}$ 46'26	0°-42'-37
evening set	690 Oct 28 j 00:44	22° $\mathring{M}$ 35'12		min. Earth dist.	696 Jul 17 j 04:58	26° $\mathring{Z}$ 45'18	8.89238 AU
				direct	696 Sep 24 j 13:52	23° $\mathring{Z}$ 27'40	
conjunction	690 Nov 13 j 15:03	24° $\mathring{M}$ 31'15	1°42'31		696 Dec 28 j 11:35	0° $\approx$	
minimum elong	690 Nov 13 j 15:05	24° $\mathring{M}$ 31'15	1°42'30	evening set	697 Jan 02 j 04:18	0° $\approx$ 32'58	
max. Earth dist.	690 Nov 13 j 09:59	24° $\mathring{M}$ 29'45	11.09785 AU				
morning rise	690 Nov 30 j 03:40	26° $\mathring{M}$ 26'49		conjunction	697 Jan 18 j 22:05	2° $\approx$ 33'05	0°-48'-6
	691 Jan 02 j 16:38	0° $\mathring{Z}$		minimum elong	697 Jan 18 j 22:03	2° $\approx$ 33'05	0°48'08
retrograde	691 Mar 10 j 00:28	3° $\mathring{Z}$ 22'10		max. Earth dist.	697 Jan 18 j 15:04	2° $\approx$ 30'59	10.84302 AU



morning rise	697 Feb 04 j 18:45	4°≈34'09		morning rise	703 Apr 24 j 09:49	21°Υ29'01	
retrograde	697 May 19 j 17:10	11°≈57'53		retrograde	703 Aug 09 j 16:59	29°Υ48'05	
opposition	697 Jul 29 j 11:46	8°≈35'16	-1°-15'-24	opposition	703 Oct 16 j 21:43	26°Υ18'06	-2°-45'-44
min. Earth dist.	697 Jul 29 j 17:13	8°≈34'14	8.78959 AU	min. Earth dist.	703 Oct 16 j 20:03	26°Υ18'26	8.10496 AU
direct	697 Oct 06 j 14:17	5°≈15'50		direct	703 Dec 22 j 06:41	22°Υ52'11	
evening set	698 Jan 14 j 04:04	12°≈26'44			704 Mar 26 j 13:21	0°♄	
				evening set	704 Apr 02 j 16:29	0°♄53'58	
conjunction	698 Jan 30 j 23:37	14°≈28'45	-1°-13'-47	conjunction	704 Apr 20 j 09:41	3°♄11'28	-2°-7'-55
minimum elong	698 Jan 30 j 23:35	14°≈28'44	1°13'48	minimum elong	704 Apr 20 j 09:44	3°♄11'29	2°07'56
max. Earth dist.	698 Jan 30 j 16:31	14°≈26'35	10.73344 AU	max. Earth dist.	704 Apr 20 j 11:53	3°♄12'11	10.06550 AU
	698 Feb 04 j 06:19	15°≈		morning rise	704 May 08 j 06:51	5°♄30'15	
morning rise	698 Feb 16 j 22:55	16°≈31'55		retrograde	704 Aug 23 j 09:50	13°♄53'39	
retrograde	698 Jun 01 j 17:45	24°≈05'01		opposition	704 Oct 30 j 02:37	10°♄23'23	-2°-30'-46
opposition	698 Aug 11 j 06:00	20°≈40'55	-1°-45'-42	min. Earth dist.	704 Oct 29 j 23:53	10°♄23'57	8.03540 AU
min. Earth dist.	698 Aug 11 j 11:13	20°≈39'55	8.67466 AU	direct	705 Jan 04 j 08:45	6°♄56'23	
direct	698 Oct 18 j 18:34	17°≈20'38			705 Apr 16 j 21:02	15°♄	
evening set	699 Jan 26 j 12:16	24°≈38'31		evening set	705 Apr 17 j 13:01	15°♄05'07	
conjunction	699 Feb 12 j 10:07	26°≈42'42	-1°-36'-44	conjunction	705 May 05 j 10:46	17°♄24'49	-1°-51'-53
minimum elong	699 Feb 12 j 10:05	26°≈42'41	1°36'44	minimum elong	705 May 05 j 10:50	17°♄24'50	1°51'54
max. Earth dist.	699 Feb 12 j 03:27	26°≈40'39	10.61384 AU	max. Earth dist.	705 May 05 j 14:56	17°♄26'11	10.00960 AU
morning rise	699 Mar 01 j 12:22	28°≈48'15		morning rise	705 May 23 j 11:40	19°♄45'30	
	699 Mar 11 j 13:59	0°♄		retrograde	705 Sep 07 j 03:54	28°♄10'16	
retrograde	699 Jun 15 j 01:11	6°♄31'27		opposition	705 Nov 13 j 10:11	24°♄40'06	-2°-6'-20
opposition	699 Aug 24 j 06:17	3°♄05'50	-2°-11'-59	min. Earth dist.	705 Nov 13 j 06:15	24°♄40'55	7.99361 AU
min. Earth dist.	699 Aug 24 j 11:00	3°♄04'55	8.55223 AU	direct	706 Jan 18 j 16:46	21°♄12'10	
	699 Oct 14 j 04:46	30°♄		evening set	706 May 02 j 15:54	29°♄25'58	
direct	699 Oct 31 j 06:14	29°≈44'33			706 May 07 j 01:26	0°♄	
	699 Nov 17 j 04:51	0°♄		conjunction	706 May 20 j 17:31	1°♄47'11	-1°-28'-50
evening set	700 Feb 08 j 06:05	7°♄10'35		minimum elong	706 May 20 j 17:35	1°♄47'13	1°28'50
conjunction	700 Feb 25 j 06:49	9°♄17'14	-1°-55'-39	max. Earth dist.	706 May 20 j 23:31	1°♄49'10	9.98328 AU
minimum elong	700 Feb 25 j 06:47	9°♄17'13	1°55'39	morning rise	706 Jun 07 j 21:04	4°♄09'00	
max. Earth dist.	700 Feb 25 j 01:57	9°♄15'43	10.48924 AU	retrograde	706 Sep 21 j 21:10	12°♄32'01	
morning rise	700 Mar 13 j 12:10	11°♄25'20		opposition	706 Nov 27 j 18:33	9°♄02'21	-1°-33'-49
retrograde	700 Jun 27 j 17:04	19°♄18'53		min. Earth dist.	706 Nov 27 j 13:20	9°♄03'26	7.98246 AU
opposition	700 Sep 05 j 12:53	15°♄51'50	-2°-32'-36	direct	707 Feb 02 j 05:50	5°♄33'41	
min. Earth dist.	700 Sep 05 j 16:05	15°♄51'12	8.42775 AU	evening set	707 May 17 j 22:06	13°♄50'16	
direct	700 Nov 12 j 01:43	12°♄29'28		conjunction	707 Jun 05 j 02:20	16°♄12'08	-1°00'-10
evening set	701 Feb 20 j 10:31	20°♄04'25		minimum elong	707 Jun 05 j 02:23	16°♄12'09	1°00'11
conjunction	701 Mar 09 j 14:43	22°♄13'45	-2°-9'-16	max. Earth dist.	707 Jun 05 j 10:04	16°♄14'40	9.98830 AU
minimum elong	701 Mar 09 j 14:41	22°♄13'44	2°09'16	morning rise	707 Jun 23 j 07:05	18°♄34'08	
max. Earth dist.	701 Mar 09 j 11:57	22°♄12'52	10.36562 AU	retrograde	707 Oct 06 j 10:45	26°♄52'33	
morning rise	701 Mar 26 j 23:34	24°♄24'35		opposition	707 Dec 12 j 02:06	23°♄23'41	0°-55'-27
	701 May 17 j 19:06	0°Υ		min. Earth dist.	707 Dec 11 j 19:32	23°♄25'02	8.00264 AU
retrograde	701 Jul 11 j 18:51	2°Υ28'03		direct	708 Feb 16 j 21:16	19°♄54'31	
	701 Sep 06 j 06:56	30°♄		evening set	708 Jun 01 j 04:18	28°♄11'25	
opposition	701 Sep 19 j 01:56	28°♄59'43	-2°-45'-59		708 Jun 15 j 04:29	0°♄	
min. Earth dist.	701 Sep 19 j 03:14	28°♄59'28	8.30742 AU	conjunction	708 Jun 19 j 09:32	0°♄32'56	0°-27'-55
direct	701 Nov 25 j 02:48	25°♄36'11		minimum elong	708 Jun 19 j 09:33	0°♄32'56	0°27'56
	702 Feb 05 j 18:29	0°Υ		max. Earth dist.	708 Jun 19 j 18:28	0°♄35'50	10.02397 AU
evening set	702 Mar 06 j 01:56	3°Υ20'26		morning rise	708 Jul 07 j 13:47	2°♄54'09	
conjunction	702 Mar 23 j 10:08	5°Υ32'34	-2°-16'-24	retrograde	708 Oct 19 j 18:44	11°♄05'37	
minimum elong	702 Mar 23 j 10:08	5°Υ32'34	2°16'24	opposition	708 Dec 25 j 06:57	7°♄37'49	0°-14'-1
max. Earth dist.	702 Mar 23 j 09:16	5°Υ32'17	10.24943 AU	min. Earth dist.	708 Dec 24 j 23:55	7°♄39'16	8.05218 AU
morning rise	702 Apr 09 j 22:56	7°Υ46'13		direct	709 Mar 02 j 12:39	4°♄08'23	
retrograde	702 Jul 26 j 03:32	15°Υ58'25		asc. node	709 Apr 30 j 22:14	7°♄08'20	
opposition	702 Oct 02 j 21:09	12°Υ29'06	-2°-50'-41	evening set	709 Jun 16 j 07:46	12°♄23'20	
min. Earth dist.	702 Oct 02 j 20:43	12°Υ29'11	8.19765 AU	conjunction	709 Jul 04 j 12:07	14°♄43'32	0°05'47
direct	702 Dec 08 j 12:20	9°Υ04'21		minimum elong	709 Jul 04 j 12:06	14°♄43'32	0°05'46
evening set	703 Mar 20 j 04:16	16°Υ57'46		behind sun begin	709 Jul 04 j 05:05	14°♄41'17	
conjunction	703 Apr 06 j 16:50	19°Υ12'40	-2°-16'-7	behind sun end	709 Jul 04 j 19:08	14°♄45'47	
minimum elong	703 Apr 06 j 16:51	19°Υ12'40	2°16'08	max. Earth dist.	709 Jul 04 j 20:57	14°♄46'23	10.08689 AU
max. Earth dist.	703 Apr 06 j 17:24	19°Υ12'51	10.14724 AU				



morning rise	709 Jul 22 j 14:09	17° <del>5</del> 03'01		max. Earth dist.	715 Sep 23 j 23:50	3° <del>5</del> 24'17	10.74190 AU
retrograde	709 Nov 02 j 19:49	25° <del>5</del> 05'57		morning rise	715 Oct 10 j 19:15	5° <del>5</del> 25'44	
opposition	710 Jan 08 j 07:40	21° <del>5</del> 39'26	0°27'37	retrograde	716 Jan 18 j 06:33	12° <del>5</del> 36'44	
min. Earth dist.	710 Jan 08 j 01:15	21° <del>5</del> 40'45	8.12664 AU	opposition	716 Mar 26 j 15:48	9° <del>5</del> 17'57	2°49'20
direct	710 Mar 17 j 01:11	18° <del>5</del> 10'03		min. Earth dist.	716 Mar 26 j 15:11	9° <del>5</del> 18'04	8.79737 AU
evening set	710 Jul 01 j 05:31	26° <del>5</del> 21'10		direct	716 Jun 05 j 11:03	5° <del>5</del> 53'51	
				evening set	716 Sep 18 j 05:43	13° <del>5</del> 20'36	
conjunction	710 Jul 19 j 07:14	28° <del>5</del> 39'16	0°38'31	conjunction	716 Oct 05 j 03:47	15° <del>5</del> 21'36	2°18'06
minimum elong	710 Jul 19 j 07:12	28° <del>5</del> 39'15	0°38'30	minimum elong	716 Oct 05 j 03:47	15° <del>5</del> 21'36	2°18'07
max. Earth dist.	710 Jul 19 j 14:55	28° <del>5</del> 41'43	10.17176 AU	max. Earth dist.	716 Oct 05 j 03:40	15° <del>5</del> 21'34	10.84694 AU
	710 Jul 29 j 19:33	0° <del>5</del> 56'18		morning rise	716 Oct 21 j 21:43	17° <del>5</del> 21'24	
morning rise	710 Aug 06 j 05:34	0° <del>5</del> 56'18		retrograde	717 Jan 29 j 05:34	24° <del>5</del> 26'33	
retrograde	710 Nov 16 j 13:52	8° <del>5</del> 49'57		opposition	717 Apr 08 j 02:02	21° <del>5</del> 08'30	2°47'30
opposition	711 Jan 22 j 03:32	5° <del>5</del> 24'54	1°06'48	min. Earth dist.	717 Apr 08 j 02:52	21° <del>5</del> 08'21	8.89587 AU
min. Earth dist.	711 Jan 21 j 22:15	5° <del>5</del> 25'59	8.22058 AU	direct	717 Jun 18 j 04:03	17° <del>5</del> 45'34	
direct	711 Mar 31 j 10:12	1° <del>5</del> 55'54		evening set	717 Sep 30 j 06:41	25° <del>5</del> 04'47	
evening set	711 Jul 15 j 19:11	10° <del>5</del> 01'37					
conjunction	711 Aug 02 j 16:53	12° <del>5</del> 01'02	1°08'30	conjunction	717 Oct 17 j 01:30	27° <del>5</del> 03'49	2°13'57
minimum elong	711 Aug 02 j 16:50	12° <del>5</del> 01'01	1°08'29	minimum elong	717 Oct 17 j 01:31	27° <del>5</del> 03'49	2°13'57
max. Earth dist.	711 Aug 02 j 23:01	12° <del>5</del> 01'59	10.27335 AU	max. Earth dist.	717 Oct 16 j 23:42	27° <del>5</del> 03'17	10.93767 AU
morning rise	711 Aug 20 j 10:32	14° <del>5</del> 03'09		morning rise	717 Nov 02 j 16:54	29° <del>5</del> 01'50	
	711 Aug 24 j 08:00	15° <del>5</del> 01			717 Nov 11 j 03:18	0° <del>5</del> 01	
retrograde	711 Nov 29 j 22:38	22° <del>5</del> 01'52		retrograde	718 Feb 09 j 23:17	6° <del>5</del> 02'30	
opposition	712 Feb 04 j 17:49	18° <del>5</del> 05'47	1°41'19	opposition	718 Apr 20 j 08:13	2° <del>5</del> 44'57	2°38'50
min. Earth dist.	712 Feb 04 j 13:34	18° <del>5</del> 05'38	8.32901 AU	min. Earth dist.	718 Apr 20 j 09:39	2° <del>5</del> 44'41	8.97809 AU
direct	712 Apr 13 j 14:55	15° <del>5</del> 02'36			718 Jun 02 j 14:19	30° <del>5</del> 01	
evening set	712 Jul 28 j 23:30	23° <del>5</del> 02'30		direct	718 Jun 30 j 15:01	29° <del>5</del> 23'08	
					718 Jul 28 j 08:27	0° <del>5</del> 01	
conjunction	712 Aug 15 j 16:21	25° <del>5</del> 03'45	1°34'08	evening set	718 Oct 12 j 00:09	6° <del>5</del> 03'40	
minimum elong	712 Aug 15 j 16:18	25° <del>5</del> 03'45	1°34'07				
max. Earth dist.	712 Aug 15 j 20:47	25° <del>5</del> 03'61	10.38679 AU	conjunction	718 Oct 28 j 16:43	8° <del>5</del> 03'12	2°04'26
morning rise	712 Sep 02 j 04:45	27° <del>5</del> 04'59		minimum elong	718 Oct 28 j 16:45	8° <del>5</del> 03'13	2°04'26
	712 Sep 21 j 01:07	0° <del>5</del> 01		max. Earth dist.	718 Oct 28 j 14:22	8° <del>5</del> 03'21	11.01072 AU
retrograde	712 Dec 11 j 22:33	5° <del>5</del> 02'42		morning rise	718 Nov 14 j 06:21	10° <del>5</del> 02'56	
opposition	713 Feb 17 j 02:00	1° <del>5</del> 08'33	2°09'33		718 Dec 28 j 03:30	15° <del>5</del> 01	
min. Earth dist.	713 Feb 16 j 22:15	1° <del>5</del> 09'17	8.44669 AU	retrograde	719 Feb 21 j 17:03	17° <del>5</del> 02'33	
	713 Mar 15 j 17:03	30° <del>5</del> 01			719 Apr 21 j 04:05	15° <del>5</del> 01	
direct	713 Apr 27 j 13:40	28° <del>5</del> 03'04		opposition	719 May 02 j 11:09	14° <del>5</del> 01'16	2°24'00
	713 Jun 08 j 21:36	0° <del>5</del> 01		min. Earth dist.	719 May 02 j 12:57	14° <del>5</del> 00'56	9.04108 AU
evening set	713 Aug 11 j 17:15	6° <del>5</del> 02'31		direct	719 Jul 12 j 20:39	10° <del>5</del> 04'31	
					719 Sep 26 j 09:34	15° <del>5</del> 01	
conjunction	713 Aug 29 j 04:58	8° <del>5</del> 03'14	1°54'21	evening set	719 Oct 23 j 11:46	17° <del>5</del> 05'24	
minimum elong	713 Aug 29 j 04:55	8° <del>5</del> 03'14	1°54'20				
max. Earth dist.	713 Aug 29 j 08:24	8° <del>5</del> 03'48	10.50654 AU	conjunction	719 Nov 09 j 02:51	19° <del>5</del> 02'57	1°50'07
morning rise	713 Sep 15 j 11:57	10° <del>5</del> 03'29		minimum elong	719 Nov 09 j 02:53	19° <del>5</del> 02'58	1°50'06
retrograde	713 Dec 24 j 16:10	18° <del>5</del> 05'34		max. Earth dist.	719 Nov 09 j 00:02	19° <del>5</del> 02'08	11.06343 AU
opposition	714 Mar 02 j 04:19	14° <del>5</del> 04'41	2°30'31	morning rise	719 Nov 25 j 15:34	21° <del>5</del> 04'53	
min. Earth dist.	714 Mar 02 j 01:00	14° <del>5</del> 04'52	8.56776 AU	retrograde	720 Mar 04 j 09:21	28° <del>5</del> 04'54	
direct	714 May 11 j 04:25	11° <del>5</del> 01'17		opposition	720 May 13 j 12:03	25° <del>5</del> 02'43	2°03'47
evening set	714 Aug 24 j 23:51	19° <del>5</del> 01'29		min. Earth dist.	720 May 13 j 15:07	25° <del>5</del> 02'09	9.08258 AU
				direct	720 Jul 23 j 19:13	22° <del>5</del> 07'54	
conjunction	714 Sep 11 j 06:34	21° <del>5</del> 07'40	2°08'30	evening set	720 Nov 02 j 19:25	29° <del>5</del> 01'25	
minimum elong	714 Sep 11 j 06:32	21° <del>5</del> 07'40	2°08'30		720 Nov 09 j 22:42	0° <del>5</del> 01	
max. Earth dist.	714 Sep 11 j 09:26	21° <del>5</del> 08'33	10.62676 AU				
morning rise	714 Sep 28 j 08:22	23° <del>5</del> 01'23		conjunction	720 Nov 19 j 09:30	1° <del>5</del> 06'24	1°31'39
	714 Dec 13 j 03:24	0° <del>5</del> 01		minimum elong	720 Nov 19 j 09:32	1° <del>5</del> 06'25	1°31'39
retrograde	715 Jan 06 j 02:55	0° <del>5</del> 30'26		max. Earth dist.	720 Nov 19 j 05:03	1° <del>5</del> 05'06	11.09392 AU
	715 Jan 30 j 08:04	30° <del>5</del> 01		morning rise	720 Dec 05 j 22:10	3° <del>5</del> 02'02	
opposition	715 Mar 15 j 00:50	27° <del>5</del> 01'04	2°43'47	retrograde	721 Mar 16 j 00:12	9° <del>5</del> 05'01	
min. Earth dist.	715 Mar 14 j 22:25	27° <del>5</del> 01'10	8.68643 AU	opposition	721 May 25 j 11:54	6° <del>5</del> 04'42	1°38'58
direct	715 May 24 j 11:01	23° <del>5</del> 04'52		min. Earth dist.	721 May 25 j 16:18	6° <del>5</del> 03'53	9.10120 AU
	715 Aug 26 j 07:59	0° <del>5</del> 01		direct	721 Aug 04 j 16:12	3° <del>5</del> 02'13	
evening set	715 Sep 06 j 19:46	1° <del>5</del> 20'17		evening set	721 Nov 14 j 00:44	10° <del>5</del> 02'11	
conjunction	715 Sep 23 j 21:53	3° <del>5</del> 23'42	2°16'23	conjunction	721 Nov 30 j 14:27	12° <del>5</del> 01'02	1°09'45
minimum elong	715 Sep 23 j 21:52	3° <del>5</del> 23'41	2°16'24	minimum elong	721 Nov 30 j 14:30	12° <del>5</del> 01'03	1°09'45



max. Earth dist.	721 Nov 30 j 08:44	12°♄15'22	11.10122 AU	conjunction	728 Feb 07 j 06:36	21°♄31'36	-1°-26'-55
morning rise	721 Dec 17 j 03:45	14°♄12'47		minimum elong	728 Feb 07 j 06:33	21°♄31'35	1°26'56
retrograde	722 Mar 27 j 18:04	21°♄10'21		max. Earth dist.	728 Feb 07 j 01:50	21°♄30'09	10.69602 AU
opposition	722 Jun 06 j 11:47	17°♄52'38	1°10'26	morning rise	728 Feb 24 j 07:07	23°♄35'41	
min. Earth dist.	722 Jun 06 j 16:37	17°♄51'45	9.09638 AU		728 Apr 30 j 18:01	0°♄	
direct	722 Aug 16 j 11:25	14°♄34'07		retrograde	728 Jun 08 j 11:32	1°♄13'00	
evening set	722 Nov 25 j 05:21	21°♄32'08			728 Jul 17 j 19:13	30°♄	
				opposition	728 Aug 17 j 20:16	27°♄48'45	-2°00'-43
conjunction	722 Dec 11 j 19:25	23°♄28'17	0°45'09	min. Earth dist.	728 Aug 17 j 23:42	27°♄48'06	8.63746 AU
minimum elong	722 Dec 11 j 19:27	23°♄28'18	0°45'10	direct	728 Oct 25 j 02:31	24°♄28'42	
max. Earth dist.	722 Dec 11 j 13:57	23°♄26'41	11.08495 AU		729 Jan 17 j 10:18	0°♄	
morning rise	722 Dec 28 j 09:42	25°♄24'34		evening set	729 Feb 01 j 22:31	1°♄49'34	
	723 Feb 11 j 15:33	0°♄					
retrograde	723 Apr 08 j 14:36	2°♄25'18		conjunction	729 Feb 18 j 21:40	3°♄54'40	-1°-47'-42
	723 Jun 06 j 08:38	30°♄		minimum elong	729 Feb 18 j 21:37	3°♄54'39	1°47'42
opposition	723 Jun 18 j 12:39	29°♄06'56	0°39'07	max. Earth dist.	729 Feb 18 j 16:55	3°♄53'11	10.57653 AU
min. Earth dist.	723 Jun 18 j 17:10	29°♄06'06	9.06811 AU	morning rise	729 Mar 08 j 01:14	6°♄01'09	
direct	723 Aug 28 j 04:38	25°♄48'47		retrograde	729 Jun 21 j 23:40	13°♄48'30	
	723 Nov 11 j 00:18	0°♄		opposition	729 Aug 30 j 23:12	10°♄22'48	-2°-23'-57
evening set	723 Dec 06 j 11:23	2°♄46'49		min. Earth dist.	729 Aug 31 j 02:19	10°♄22'12	8.51548 AU
				direct	729 Nov 06 j 16:44	7°♄01'41	
conjunction	723 Dec 23 j 02:06	4°♄43'39	0°18'42	evening set	730 Feb 14 j 21:16	14°♄30'58	
minimum elong	723 Dec 23 j 02:07	4°♄43'39	0°18'42				
max. Earth dist.	723 Dec 22 j 20:32	4°♄42'01	11.04551 AU	conjunction	730 Mar 03 j 23:28	16°♄38'36	-2°-3'-46
morning rise	724 Jan 08 j 17:45	6°♄40'49		minimum elong	730 Mar 03 j 23:26	16°♄38'35	2°03'46
retrograde	724 Apr 19 j 17:04	13°♄46'14		max. Earth dist.	730 Mar 03 j 18:47	16°♄37'08	10.45272 AU
opposition	724 Jun 29 j 15:38	10°♄27'03	0°06'00	morning rise	730 Mar 21 j 06:32	18°♄47'45	
min. Earth dist.	724 Jun 29 j 20:24	10°♄26'10	9.01736 AU	retrograde	730 Jul 05 j 20:10	26°♄45'06	
desc. node	724 Sep 04 j 18:09	7°♄09'30		opposition	730 Sep 13 j 08:20	23°♄18'04	-2°-40'-41
direct	724 Sep 07 j 22:30	7°♄09'00		min. Earth dist.	730 Sep 13 j 11:16	23°♄17'30	8.39207 AU
evening set	724 Dec 16 j 20:31	14°♄08'38		direct	730 Nov 19 j 13:49	19°♄55'44	
				evening set	731 Feb 28 j 06:41	27°♄34'12	
conjunction	725 Jan 02 j 12:04	16°♄06'28	0°-8'-49				
minimum elong	725 Jan 02 j 12:04	16°♄06'28	0°08'50	conjunction	731 Mar 17 j 12:38	29°♄44'35	-2°-13'-55
behind sun begin	725 Jan 02 j 06:01	16°♄04'42		minimum elong	731 Mar 17 j 12:37	29°♄44'34	2°13'55
behind sun end	725 Jan 02 j 18:07	16°♄08'15		max. Earth dist.	731 Mar 17 j 09:04	29°♄43'27	10.33079 AU
max. Earth dist.	725 Jan 02 j 05:37	16°♄04'34	10.98438 AU		731 Mar 19 j 13:15	0°♄	
morning rise	725 Jan 19 j 05:36	18°♄04'55		morning rise	731 Apr 03 j 23:30	1°♄56'30	
retrograde	725 May 01 j 22:41	25°♄16'30		retrograde	731 Jul 19 j 23:12	10°♄03'13	
opposition	725 Jul 11 j 22:01	21°♄56'17	0°-27'-49	opposition	731 Sep 26 j 23:49	6°♄35'00	-2°-49'-26
min. Earth dist.	725 Jul 12 j 03:24	21°♄55'17	8.94607 AU	min. Earth dist.	731 Sep 27 j 01:48	6°♄34'36	8.27412 AU
direct	725 Sep 19 j 16:48	18°♄38'05		direct	731 Dec 02 j 20:06	3°♄11'21	
evening set	725 Dec 28 j 10:08	25°♄40'53		evening set	732 Mar 13 j 02:47	10°♄59'08	
conjunction	726 Jan 14 j 02:58	27°♄40'03	0°-36'-16	conjunction	732 Mar 30 j 13:04	13°♄12'20	-2°-17'-5
minimum elong	726 Jan 14 j 02:57	27°♄40'03	0°36'17	minimum elong	732 Mar 30 j 13:05	13°♄12'20	2°17'06
max. Earth dist.	726 Jan 13 j 20:20	27°♄38'04	10.90378 AU	max. Earth dist.	732 Mar 30 j 11:45	13°♄11'54	10.21810 AU
morning rise	726 Jan 30 j 22:40	29°♄40'06		morning rise	732 Apr 17 j 03:57	15°♄27'02	
	726 Feb 02 j 18:52	0°♄		retrograde	732 Aug 02 j 08:23	23°♄41'41	
retrograde	726 May 14 j 10:31	6°♄59'14		opposition	732 Oct 09 j 21:03	20°♄12'28	-2°-49'00
opposition	726 Jul 24 j 08:26	3°♄37'47	-1°-1'-8	min. Earth dist.	732 Oct 09 j 21:19	20°♄12'24	8.16896 AU
min. Earth dist.	726 Jul 24 j 13:44	3°♄36'47	8.85678 AU	direct	732 Dec 15 j 10:29	16°♄47'30	
direct	726 Oct 01 j 16:19	0°♄19'11		evening set	733 Mar 27 j 09:23	24°♄44'05	
evening set	727 Jan 09 j 06:08	7°♄26'39					
				conjunction	733 Apr 14 j 00:23	27°♄00'03	-2°-12'-35
conjunction	727 Jan 26 j 00:45	9°♄27'31	-1°-2'-41	minimum elong	733 Apr 14 j 00:25	27°♄00'04	2°12'36
minimum elong	727 Jan 26 j 00:43	9°♄27'31	1°02'43	max. Earth dist.	733 Apr 14 j 01:27	27°♄00'24	10.12181 AU
max. Earth dist.	727 Jan 25 j 19:05	9°♄25'48	10.80648 AU	morning rise	733 May 01 j 19:24	29°♄17'21	
morning rise	727 Feb 11 j 22:43	11°♄29'26			733 May 07 j 11:01	0°♄	
	727 Mar 15 j 18:33	15°♄		retrograde	733 Aug 16 j 22:57	7°♄37'43	
retrograde	727 May 27 j 07:34	18°♄57'14		opposition	733 Oct 23 j 22:56	4°♄07'48	-2°-38'-44
opposition	727 Aug 05 j 23:29	15°♄34'26	-1°-32'-35	min. Earth dist.	733 Oct 23 j 21:16	4°♄08'09	8.08323 AU
min. Earth dist.	727 Aug 06 j 03:55	15°♄33'35	8.75265 AU	direct	733 Dec 29 j 07:26	0°♄41'32	
	727 Aug 13 j 13:58	15°♄		evening set	734 Apr 11 j 01:13	8°♄45'53	
direct	727 Oct 13 j 19:11	12°♄15'13					
	727 Dec 10 j 13:53	15°♄		conjunction	734 Apr 28 j 20:54	11°♄04'19	-2°00'-11
evening set	728 Jan 21 j 09:53	19°♄28'46		minimum elong	734 Apr 28 j 20:58	11°♄04'20	2°00'13



max. Earth dist.	734 Apr 28 j 23:50	11°♄05'16	10.04807 AU	opposition	740 Jan 16 j 01:17	29°♄12'25	0°48'41
morning rise	734 May 16 j 19:51	13°♄23'52		min. Earth dist.	740 Jan 15 j 19:15	29°♄13'39	8.16098 AU
	734 May 29 j 15:09	15°♄		direct	740 Mar 24 j 02:41	25°♄42'40	
retrograde	734 Aug 31 j 16:44	21°♄47'10			740 Jun 05 j 06:42	0°♄	
opposition	734 Nov 07 j 04:21	18°♄16'58	-2°-18'-42	evening set	740 Jul 08 j 08:22	3°♄51'25	
min. Earth dist.	734 Nov 07 j 01:18	18°♄17'35	8.02239 AU				
	734 Dec 29 j 20:21	15°♄		conjunction	740 Jul 26 j 08:18	6°♄08'20	0°54'43
direct	735 Jan 12 j 10:34	14°♄49'28		minimum elong	740 Jul 26 j 08:16	6°♄08'19	0°54'43
	735 Jan 26 j 01:59	15°♄		max. Earth dist.	740 Jul 26 j 15:29	6°♄10'37	10.21043 AU
evening set	735 Apr 26 j 00:17	23°♄00'00		morning rise	740 Aug 13 j 04:28	8°♄24'02	
					740 Oct 17 j 08:43	15°♄	
conjunction	735 May 14 j 00:07	25°♄20'21	-1°-40'-21	retrograde	740 Nov 23 j 00:53	16°♄13'06	
minimum elong	735 May 14 j 00:11	25°♄20'23	1°40'22		740 Dec 30 j 05:05	15°♄	
max. Earth dist.	735 May 14 j 04:32	25°♄21'48	10.00159 AU	opposition	741 Jan 28 j 18:05	12°♄48'15	1°25'38
morning rise	735 Jun 01 j 02:17	27°♄41'29		min. Earth dist.	741 Jan 28 j 12:06	12°♄49'27	8.26363 AU
	735 Jun 19 j 16:25	0°♄		direct	741 Apr 07 j 09:25	9°♄19'03	
retrograde	735 Sep 15 j 10:40	6°♄04'46			741 Jul 02 j 22:27	15°♄	
opposition	735 Nov 21 j 11:37	2°♄34'40	-1°-49'-52	evening set	741 Jul 22 j 17:15	17°♄21'39	
min. Earth dist.	735 Nov 21 j 07:39	2°♄35'30	7.99043 AU				
	735 Dec 26 j 14:17	30°♄		conjunction	741 Aug 09 j 12:45	19°♄35'38	1°22'34
direct	736 Jan 26 j 20:40	29°♄06'08		minimum elong	741 Aug 09 j 12:42	19°♄35'37	1°22'34
	736 Feb 26 j 23:49	0°♄		max. Earth dist.	741 Aug 09 j 19:36	19°♄37'48	10.32033 AU
evening set	736 May 10 j 04:07	7°♄20'50		morning rise	741 Aug 27 j 03:41	21°♄48'13	
				retrograde	741 Dec 06 j 05:34	29°♄27'44	
conjunction	736 May 28 j 07:10	9°♄42'20	-1°-14'-12	opposition	742 Feb 11 j 05:06	26°♄04'26	1°57'00
minimum elong	736 May 28 j 07:14	9°♄42'21	1°14'13	min. Earth dist.	742 Feb 11 j 00:04	26°♄05'26	8.37968 AU
max. Earth dist.	736 May 28 j 12:39	9°♄44'08	9.98543 AU	direct	742 Apr 21 j 09:57	22°♄36'06	
morning rise	736 Jun 15 j 11:26	12°♄04'14			742 Aug 01 j 08:31	0°♄	
retrograde	736 Sep 29 j 01:02	20°♄24'32		evening set	742 Aug 05 j 15:59	0°♄31'24	
opposition	736 Dec 04 j 18:56	16°♄54'57	-1°-14'-4				
min. Earth dist.	736 Dec 04 j 14:30	16°♄55'52	7.98946 AU	conjunction	742 Aug 23 j 06:21	2°♄42'13	1°45'27
direct	737 Feb 09 j 10:37	13°♄25'36		minimum elong	742 Aug 23 j 06:17	2°♄42'12	1°45'26
evening set	737 May 25 j 09:53	21°♄42'10		max. Earth dist.	742 Aug 23 j 12:01	2°♄43'59	10.44037 AU
				morning rise	742 Sep 09 j 15:50	4°♄51'33	
conjunction	737 Jun 12 j 14:44	24°♄03'55	0°-43'-27	retrograde	742 Dec 19 j 02:58	12°♄21'54	
minimum elong	737 Jun 12 j 14:46	24°♄03'56	0°43'28	opposition	743 Feb 24 j 10:12	9°♄00'06	2°21'29
max. Earth dist.	737 Jun 12 j 20:47	24°♄05'53	10.00044 AU	min. Earth dist.	743 Feb 24 j 06:24	9°♄00'50	8.50284 AU
morning rise	737 Jun 30 j 19:32	26°♄25'36		direct	743 May 05 j 03:15	5°♄32'52	
	737 Jul 30 j 10:49	0°♄		evening set	743 Aug 19 j 03:43	13°♄20'08	
retrograde	737 Oct 13 j 10:40	4°♄40'22					
opposition	737 Dec 19 j 00:41	1°♄11'39	0°-33'-49	conjunction	743 Sep 05 j 12:48	15°♄27'49	2°02'30
min. Earth dist.	737 Dec 18 j 19:49	1°♄12'39	8.01930 AU	minimum elong	743 Sep 05 j 12:46	15°♄27'48	2°02'30
	738 Jan 02 j 17:31	30°♄		max. Earth dist.	743 Sep 05 j 16:38	15°♄28'59	10.56428 AU
direct	738 Feb 24 j 01:56	27°♄41'48		morning rise	743 Sep 22 j 17:08	17°♄34'00	
	738 Apr 16 j 10:07	0°♄		retrograde	743 Dec 31 j 15:37	24°♄55'52	
evening set	738 Jun 09 j 14:29	5°♄57'55		opposition	744 Mar 08 j 09:17	21°♄35'27	2°38'23
				min. Earth dist.	744 Mar 08 j 06:28	21°♄36'00	8.62676 AU
conjunction	738 Jun 27 j 19:21	8°♄18'53	0°-10'-16	direct	744 May 17 j 14:04	18°♄09'30	
minimum elong	738 Jun 27 j 19:22	8°♄18'54	0°10'17	evening set	744 Aug 31 j 04:46	25°♄48'27	
behind sun begin	738 Jun 27 j 13:36	8°♄17'02					
behind sun end	738 Jun 28 j 01:08	8°♄20'45		conjunction	744 Sep 17 j 08:57	27°♄53'11	2°13'20
max. Earth dist.	738 Jun 28 j 01:54	8°♄21'00	10.04527 AU	minimum elong	744 Sep 17 j 08:55	27°♄53'10	2°13'21
morning rise	738 Jul 15 j 22:50	10°♄39'23		max. Earth dist.	744 Sep 17 j 11:12	27°♄53'52	10.68596 AU
asc. node	738 Oct 21 j 08:32	18°♄44'26		morning rise	744 Oct 04 j 08:34	29°♄56'30	
retrograde	738 Oct 27 j 14:21	18°♄46'40			744 Oct 04 j 20:17	0°♄	
opposition	739 Jan 02 j 03:11	15°♄19'03	0°08'02	retrograde	745 Jan 11 j 21:51	7°♄10'49	
min. Earth dist.	739 Jan 01 j 21:39	15°♄20'11	8.07776 AU	opposition	745 Mar 21 j 02:41	3°♄51'37	2°47'31
direct	739 Mar 10 j 15:51	11°♄49'05		min. Earth dist.	745 Mar 21 j 00:24	3°♄52'04	8.74547 AU
evening set	739 Jun 24 j 14:52	20°♄02'29		direct	745 May 30 j 18:43	0°♄27'02	
				evening set	745 Sep 12 j 19:29	7°♄57'44	
conjunction	739 Jul 12 j 18:01	22°♄21'48	0°23'12				
minimum elong	739 Jul 12 j 18:00	22°♄21'47	0°23'12	conjunction	745 Sep 29 j 19:26	9°♄59'51	2°17'56
max. Earth dist.	739 Jul 13 j 01:02	22°♄24'03	10.11682 AU	minimum elong	745 Sep 29 j 19:26	9°♄59'51	2°17'56
morning rise	739 Jul 30 j 18:31	24°♄40'13		max. Earth dist.	745 Sep 29 j 21:00	10°♄00'19	10.79986 AU
	739 Sep 16 j 13:24	0°♄		morning rise	745 Oct 16 j 14:59	12°♄00'40	
retrograde	739 Nov 10 j 11:48	2°♄38'43		retrograde	746 Jan 24 j 00:45	19°♄08'34	
	740 Jan 06 j 06:21	30°♄		opposition	746 Apr 02 j 15:18	15°♄50'23	2°49'05



min. Earth dist.	746 Apr 02 j 13:51	15° $\underline{\Delta}$ 50'39	8.85378 AU	min. Earth dist.	752 Jun 12 j 14:06	24° $\times$ 07'38	9.08580 AU
direct	746 Jun 12 j 14:29	12° $\underline{\Delta}$ 27'11		direct	752 Aug 22 j 02:18	20° $\times$ 50'41	
evening set	746 Sep 25 j 00:44	19° $\underline{\Delta}$ 49'58		evening set	752 Nov 30 j 16:05	27° $\times$ 48'49	
conjunction	746 Oct 11 j 21:10	21° $\underline{\Delta}$ 49'54	2°16'29	conjunction	752 Dec 17 j 06:19	29° $\times$ 45'19	0°31'08
minimum elong	746 Oct 11 j 21:11	21° $\underline{\Delta}$ 49'54	2°16'29	minimum elong	752 Dec 17 j 06:20	29° $\times$ 45'19	0°31'08
max. Earth dist.	746 Oct 11 j 21:57	21° $\underline{\Delta}$ 50'08	10.90117 AU	max. Earth dist.	752 Dec 16 j 22:32	29° $\times$ 43'02	11.06605 AU
morning rise	746 Oct 28 j 13:34	23° $\underline{\Delta}$ 48'42			752 Dec 19 j 08:09	0° $\overline{\text{C}}$	
	747 Jan 04 j 00:47	0° $\overline{\text{M}}$		morning rise	753 Jan 02 j 21:24	1° $\overline{\text{C}}$ 42'05	
retrograde	747 Feb 04 j 21:51	0° $\overline{\text{M}}$ 51'24		retrograde	753 Apr 14 j 11:44	8° $\overline{\text{C}}$ 45'22	
	747 Mar 09 j 09:32	30° $\overline{\text{R}}$ $\underline{\Delta}$		opposition	753 Jun 24 j 10:14	5° $\overline{\text{C}}$ 26'43	0°21'30
opposition	747 Apr 14 j 23:38	27° $\underline{\Delta}$ 33'59	2°43'33	min. Earth dist.	753 Jun 24 j 16:51	5° $\overline{\text{C}}$ 25'30	9.04062 AU
min. Earth dist.	747 Apr 14 j 23:51	27° $\underline{\Delta}$ 33'57	8.94729 AU	direct	753 Sep 02 j 21:43	2° $\overline{\text{C}}$ 08'39	
direct	747 Jun 25 j 02:44	24° $\underline{\Delta}$ 12'04		evening set	753 Dec 11 j 23:49	9° $\overline{\text{C}}$ 07'42	
	747 Sep 24 j 00:44	0° $\overline{\text{M}}$					
evening set	747 Oct 06 j 22:06	1° $\overline{\text{M}}$ 27'43		conjunction	753 Dec 28 j 15:00	11° $\overline{\text{C}}$ 05'06	0°04'03
conjunction	747 Oct 23 j 15:42	3° $\overline{\text{M}}$ 25'54	2°09'25	minimum elong	753 Dec 28 j 15:00	11° $\overline{\text{C}}$ 05'06	0°04'03
minimum elong	747 Oct 23 j 15:44	3° $\overline{\text{M}}$ 25'54	2°09'24	behind sun begin	753 Dec 28 j 08:07	11° $\overline{\text{C}}$ 03'05	
max. Earth dist.	747 Oct 23 j 14:30	3° $\overline{\text{M}}$ 25'32	10.98582 AU	behind sun end	753 Dec 28 j 21:53	11° $\overline{\text{C}}$ 07'07	
morning rise	747 Nov 09 j 06:02	5° $\overline{\text{M}}$ 23'10		max. Earth dist.	753 Dec 28 j 07:39	11° $\overline{\text{C}}$ 02'57	11.00996 AU
retrograde	748 Feb 16 j 15:29	12° $\overline{\text{M}}$ 22'02		morning rise	754 Jan 14 j 07:40	13° $\overline{\text{C}}$ 03'00	
opposition	748 Apr 26 j 04:15	9° $\overline{\text{M}}$ 05'08	2°31'30	desc. node	754 Feb 21 j 02:37	17° $\overline{\text{C}}$ 02'17	
min. Earth dist.	748 Apr 26 j 06:19	9° $\overline{\text{M}}$ 04'44	9.02220 AU	retrograde	754 Apr 26 j 15:29	20° $\overline{\text{C}}$ 11'54	
direct	748 Jul 06 j 11:17	5° $\overline{\text{M}}$ 44'20		opposition	754 Jul 06 j 15:13	16° $\overline{\text{C}}$ 52'04	0°-12'-9
evening set	748 Oct 17 j 12:54	12° $\overline{\text{M}}$ 53'48		min. Earth dist.	754 Jul 06 j 21:17	16° $\overline{\text{C}}$ 50'57	8.97371 AU
				direct	754 Sep 14 j 16:29	13° $\overline{\text{C}}$ 33'47	
conjunction	748 Nov 03 j 04:28	14° $\overline{\text{M}}$ 50'44	1°57'16	evening set	754 Dec 23 j 11:23	20° $\overline{\text{C}}$ 35'20	
minimum elong	748 Nov 03 j 04:30	14° $\overline{\text{M}}$ 50'44	1°57'15				
max. Earth dist.	748 Nov 03 j 01:06	14° $\overline{\text{M}}$ 49'44	11.05034 AU	conjunction	755 Jan 09 j 03:48	22° $\overline{\text{C}}$ 33'59	0°-23'-37
	748 Nov 04 j 11:56	15° $\overline{\text{M}}$		minimum elong	755 Jan 09 j 03:47	22° $\overline{\text{C}}$ 33'59	0°23'39
morning rise	748 Nov 19 j 17:38	16° $\overline{\text{M}}$ 46'57		max. Earth dist.	755 Jan 08 j 20:55	22° $\overline{\text{C}}$ 31'56	10.93311 AU
retrograde	749 Feb 27 j 07:23	23° $\overline{\text{M}}$ 43'28		morning rise	755 Jan 25 j 22:23	24° $\overline{\text{C}}$ 33'22	
opposition	749 May 08 j 06:23	20° $\overline{\text{M}}$ 26'45	2°13'42		755 Mar 21 j 22:11	0° $\approx$	
min. Earth dist.	749 May 08 j 09:24	20° $\overline{\text{M}}$ 26'12	9.07529 AU	retrograde	755 May 09 j 02:00	1° $\approx$ 49'17	
direct	749 Jul 18 j 14:16	17° $\overline{\text{M}}$ 06'58			755 Jun 27 j 17:00	30° $\overline{\text{R}}$ $\overline{\text{C}}$	
evening set	749 Oct 28 j 22:31	24° $\overline{\text{M}}$ 11'24		opposition	755 Jul 18 j 23:49	28° $\overline{\text{C}}$ 28'06	0°-45'-53
conjunction	749 Nov 14 j 12:58	26° $\overline{\text{M}}$ 07'33	1°40'40	min. Earth dist.	755 Jul 19 j 05:25	28° $\overline{\text{C}}$ 27'04	8.88750 AU
minimum elong	749 Nov 14 j 13:01	26° $\overline{\text{M}}$ 07'34	1°40'39	direct	755 Sep 26 j 13:59	25° $\overline{\text{C}}$ 09'22	
max. Earth dist.	749 Nov 14 j 08:51	26° $\overline{\text{M}}$ 06'20	11.09177 AU		755 Dec 15 j 07:55	0° $\approx$	
morning rise	749 Dec 01 j 01:37	28° $\overline{\text{M}}$ 03'13		evening set	756 Jan 04 j 04:32	2° $\approx$ 14'59	
	749 Dec 18 j 13:46	0° $\times$		conjunction	756 Jan 20 j 22:18	4° $\approx$ 15'12	0°-50'-41
retrograde	750 Mar 10 j 23:55	4° $\times$ 59'01		minimum elong	756 Jan 20 j 22:16	4° $\approx$ 15'11	0°50'43
opposition	750 May 20 j 06:57	1° $\times$ 42'13	1°50'57	max. Earth dist.	756 Jan 20 j 14:56	4° $\approx$ 12'59	10.83839 AU
min. Earth dist.	750 May 20 j 10:37	1° $\times$ 41'33	9.10401 AU	morning rise	756 Feb 06 j 19:10	6° $\approx$ 16'22	
	750 Jun 13 j 15:58	30° $\overline{\text{R}}$ $\overline{\text{M}}$		retrograde	756 May 20 j 19:28	13° $\approx$ 40'34	
direct	750 Jul 30 j 13:32	28° $\overline{\text{M}}$ 23'14		opposition	756 Jul 30 j 12:58	10° $\approx$ 17'57	-1°-18'-25
	750 Sep 13 j 23:47	0° $\times$		min. Earth dist.	756 Jul 30 j 18:40	10° $\approx$ 16'52	8.78530 AU
evening set	750 Nov 09 j 05:07	5° $\times$ 24'03		direct	756 Oct 07 j 13:47	6° $\approx$ 58'32	
conjunction	750 Nov 25 j 19:05	7° $\times$ 19'54	1°20'16	evening set	757 Jan 15 j 04:42	14° $\approx$ 09'45	
minimum elong	750 Nov 25 j 19:07	7° $\times$ 19'55	1°20'17		757 Jan 22 j 04:03	15° $\approx$	
max. Earth dist.	750 Nov 25 j 14:07	7° $\times$ 18'27	11.10816 AU	conjunction	757 Feb 01 j 00:17	16° $\approx$ 11'49	-1°-16'-6
morning rise	750 Dec 12 j 07:53	9° $\times$ 15'30		minimum elong	757 Feb 01 j 00:15	16° $\approx$ 11'48	1°16'08
retrograde	751 Mar 22 j 17:53	16° $\times$ 12'11		max. Earth dist.	757 Jan 31 j 17:08	16° $\approx$ 09'39	10.72951 AU
opposition	751 Jun 01 j 06:58	12° $\times$ 55'04	1°24'03	morning rise	757 Feb 17 j 23:46	18° $\approx$ 15'05	
min. Earth dist.	751 Jun 01 j 11:49	12° $\times$ 54'11	9.10736 AU	retrograde	757 Jun 02 j 18:00	25° $\approx$ 48'36	
direct	751 Aug 11 j 08:21	9° $\times$ 36'40		opposition	757 Aug 12 j 07:29	22° $\approx$ 24'28	-1°-48'-20
evening set	751 Nov 20 j 10:26	16° $\times$ 35'22		min. Earth dist.	757 Aug 12 j 12:49	22° $\approx$ 23'27	8.67118 AU
conjunction	751 Dec 07 j 00:18	18° $\times$ 31'21	0°56'50	direct	757 Oct 19 j 19:48	19° $\approx$ 04'11	
minimum elong	751 Dec 07 j 00:20	18° $\times$ 31'22	0°56'51	evening set	758 Jan 27 j 13:10	26° $\approx$ 22'20	
max. Earth dist.	751 Dec 06 j 17:33	18° $\times$ 29'22	11.09928 AU	conjunction	758 Feb 13 j 11:11	28° $\approx$ 26'36	-1°-38'-40
morning rise	751 Dec 23 j 14:02	20° $\times$ 27'21		minimum elong	758 Feb 13 j 11:08	28° $\approx$ 26'35	1°38'40
retrograde	752 Apr 02 j 12:23	27° $\times$ 26'32		max. Earth dist.	758 Feb 13 j 05:29	28° $\approx$ 24'50	10.61079 AU
opposition	752 Jun 12 j 07:46	24° $\times$ 08'48	0°53'55		758 Feb 26 j 03:17	0° $\times$	
				morning rise	758 Mar 02 j 13:29	0° $\times$ 32'11	



retrograde	758 Jun 16 j 02:28	8° <del>✕</del> 15'44		max. Earth dist.	764 May 06 j 16:42	19° <del>8</del> 09'09	10.01268 AU
opposition	758 Aug 25 j 07:49	4° <del>✕</del> 50'04	-2°-14'-5	morning rise	764 May 24 j 13:10	21° <del>8</del> 28'19	
min. Earth dist.	758 Aug 25 j 11:57	4° <del>✕</del> 49'16	8.54975 AU	retrograde	764 Sep 08 j 04:03	29° <del>8</del> 52'31	
direct	758 Nov 01 j 08:30	1° <del>✕</del> 28'47		opposition	764 Nov 14 j 10:16	26° <del>8</del> 22'20	-2°-3'-52
evening set	759 Feb 09 j 07:25	8° <del>✕</del> 54'59		min. Earth dist.	764 Nov 14 j 06:03	26° <del>8</del> 23'12	7.99693 AU
				direct	765 Jan 19 j 18:09	22° <del>8</del> 54'19	
conjunction	759 Feb 26 j 08:21	11° <del>✕</del> 01'42	-1°-57'-5		765 Apr 24 j 18:35	0° <del>II</del>	
minimum elong	759 Feb 26 j 08:19	11° <del>✕</del> 01'41	1°57'05	evening set	765 May 03 j 16:43	1° <del>II</del> 07'48	
max. Earth dist.	759 Feb 26 j 04:25	11° <del>✕</del> 00'28	10.48722 AU				
morning rise	759 Mar 15 j 13:44	13° <del>✕</del> 09'52		conjunction	765 May 21 j 18:35	3° <del>II</del> 28'59	-1°-26'-39
retrograde	759 Jun 29 j 20:10	21° <del>✕</del> 03'34		minimum elong	765 May 21 j 18:39	3° <del>II</del> 29'00	1°26'40
opposition	759 Sep 07 j 14:16	17° <del>✕</del> 36'28	-2°-34'-2	max. Earth dist.	765 May 22 j 01:12	3° <del>II</del> 31'09	9.98687 AU
min. Earth dist.	759 Sep 07 j 16:39	17° <del>✕</del> 36'00	8.42635 AU	morning rise	765 Jun 08 j 22:09	5° <del>II</del> 50'44	
direct	759 Nov 14 j 02:01	14° <del>✕</del> 14'05		retrograde	765 Sep 22 j 20:33	14° <del>II</del> 13'09	
evening set	760 Feb 22 j 12:08	21° <del>✕</del> 49'09		opposition	765 Nov 28 j 18:11	10° <del>II</del> 43'29	-1°-30'-51
				min. Earth dist.	765 Nov 28 j 12:32	10° <del>II</del> 44'39	7.98619 AU
conjunction	760 Mar 10 j 16:26	23° <del>✕</del> 58'30	-2°-10'-7	direct	766 Feb 03 j 06:28	7° <del>II</del> 14'46	
minimum elong	760 Mar 10 j 16:25	23° <del>✕</del> 58'30	2°10'07	evening set	766 May 18 j 22:41	15° <del>II</del> 31'03	
max. Earth dist.	760 Mar 10 j 13:47	23° <del>✕</del> 57'40	10.36471 AU				
morning rise	760 Mar 28 j 01:24	26° <del>✕</del> 09'23		conjunction	766 Jun 06 j 03:04	17° <del>II</del> 52'51	0°-57'-40
	760 Apr 30 j 09:30	0° <del>Y</del>		minimum elong	766 Jun 06 j 03:07	17° <del>II</del> 52'52	0°57'42
retrograde	760 Jul 12 j 21:23	4° <del>Y</del> 12'50		max. Earth dist.	766 Jun 06 j 11:13	17° <del>II</del> 55'31	9.99222 AU
opposition	760 Sep 20 j 03:18	0° <del>Y</del> 44'29	-2°-46'-37	morning rise	766 Jun 24 j 07:44	20° <del>II</del> 14'46	
min. Earth dist.	760 Sep 20 j 04:16	0° <del>Y</del> 44'17	8.30711 AU	retrograde	766 Oct 07 j 09:57	28° <del>II</del> 32'36	
	760 Sep 29 j 12:13	30° <del>R</del> <del>✕</del>		opposition	766 Dec 13 j 01:23	25° <del>II</del> 03'46	0°-52'-12
direct	760 Nov 26 j 03:21	27° <del>✕</del> 20'53		min. Earth dist.	766 Dec 12 j 18:49	25° <del>II</del> 05'08	8.00663 AU
	761 Jan 20 j 07:19	0° <del>Y</del>		direct	767 Feb 17 j 20:44	21° <del>II</del> 34'35	
evening set	761 Mar 07 j 03:35	5° <del>Y</del> 05'10		evening set	767 Jun 03 j 04:40	29° <del>II</del> 51'13	
					767 Jun 04 j 08:10	0° <del>☾</del>	
conjunction	761 Mar 24 j 11:50	7° <del>Y</del> 17'18	-2°-16'-36				
minimum elong	761 Mar 24 j 11:50	7° <del>Y</del> 17'18	2°16'36	conjunction	767 Jun 21 j 09:50	2° <del>☾</del> 12'39	0°-25'-15
max. Earth dist.	761 Mar 24 j 10:23	7° <del>Y</del> 16'51	10.24970 AU	minimum elong	767 Jun 21 j 09:51	2° <del>☾</del> 12'39	0°25'17
morning rise	761 Apr 11 j 00:52	9° <del>Y</del> 30'58		max. Earth dist.	767 Jun 21 j 18:45	2° <del>☾</del> 15'32	10.02814 AU
retrograde	761 Jul 27 j 04:33	17° <del>Y</del> 43'01		morning rise	767 Jul 09 j 13:56	4° <del>☾</del> 33'44	
opposition	761 Oct 03 j 22:23	14° <del>Y</del> 13'39	-2°-50'-30	retrograde	767 Oct 21 j 18:12	12° <del>☾</del> 44'41	
min. Earth dist.	761 Oct 03 j 22:17	14° <del>Y</del> 13'40	8.19849 AU	opposition	767 Dec 27 j 06:01	9° <del>☾</del> 16'58	0°-10'-40
direct	761 Dec 09 j 13:58	10° <del>Y</del> 48'50		min. Earth dist.	767 Dec 26 j 23:27	9° <del>☾</del> 18'19	8.05659 AU
evening set	762 Mar 21 j 05:53	18° <del>Y</del> 42'10		direct	768 Mar 03 j 11:17	5° <del>☾</del> 47'32	
				asc. node	768 Apr 01 j 20:17	6° <del>☾</del> 34'13	
conjunction	762 Apr 07 j 18:36	20° <del>Y</del> 57'05	-2°-15'-38	evening set	768 Jun 17 j 07:46	14° <del>☾</del> 02'13	
minimum elong	762 Apr 07 j 18:37	20° <del>Y</del> 57'05	2°15'39				
max. Earth dist.	762 Apr 07 j 18:32	20° <del>Y</del> 57'04	10.14868 AU	conjunction	768 Jul 05 j 11:54	16° <del>☾</del> 22'19	0°08'25
morning rise	762 Apr 25 j 11:53	23° <del>Y</del> 13'27		minimum elong	768 Jul 05 j 11:53	16° <del>☾</del> 22'19	0°08'24
	762 Jun 29 j 12:58	0° <del>8</del>		behind sun begin	768 Jul 05 j 05:28	16° <del>☾</del> 20'15	
retrograde	762 Aug 10 j 17:26	1° <del>8</del> 32'09		behind sun end	768 Jul 05 j 18:19	16° <del>☾</del> 24'22	
	762 Sep 22 j 08:05	30° <del>R</del> <del>Y</del>		max. Earth dist.	768 Jul 05 j 20:17	16° <del>☾</del> 25'00	10.09168 AU
opposition	762 Oct 17 j 22:38	28° <del>Y</del> 02'09	-2°-44'-42	morning rise	768 Jul 23 j 13:47	18° <del>☾</del> 41'40	
min. Earth dist.	762 Oct 17 j 21:36	28° <del>Y</del> 02'21	8.10687 AU	retrograde	768 Nov 03 j 19:18	26° <del>☾</del> 44'04	
direct	762 Dec 23 j 08:07	24° <del>Y</del> 36'08		opposition	769 Jan 09 j 06:27	23° <del>☾</del> 17'39	0°30'50
	763 Mar 14 j 07:05	0° <del>8</del>		min. Earth dist.	769 Jan 09 j 00:38	23° <del>☾</del> 18'50	8.13195 AU
evening set	763 Apr 04 j 17:58	2° <del>8</del> 37'44		direct	769 Mar 18 j 00:18	19° <del>☾</del> 48'15	
				evening set	769 Jul 02 j 05:06	27° <del>☾</del> 59'03	
conjunction	763 Apr 22 j 11:25	4° <del>8</del> 55'14	-2°-6'-47		769 Jul 18 j 01:31	0° <del>♂</del>	
minimum elong	763 Apr 22 j 11:27	4° <del>8</del> 55'15	2°06'48				
max. Earth dist.	763 Apr 22 j 13:28	4° <del>8</del> 55'54	10.06788 AU	conjunction	769 Jul 20 j 06:31	0° <del>♂</del> 16'59	0°40'59
morning rise	763 May 10 j 08:48	7° <del>8</del> 14'00		minimum elong	769 Jul 20 j 06:29	0° <del>♂</del> 16'58	0°40'59
	763 Jul 30 j 06:31	15° <del>8</del>		max. Earth dist.	769 Jul 20 j 13:24	0° <del>♂</del> 19'11	10.17750 AU
retrograde	763 Aug 25 j 10:04	15° <del>8</del> 36'54		morning rise	769 Aug 07 j 04:43	2° <del>♂</del> 33'52	
	763 Sep 20 j 14:54	15° <del>R</del> <del>8</del>		retrograde	769 Nov 17 j 11:17	10° <del>♂</del> 26'57	
opposition	763 Nov 01 j 03:08	12° <del>8</del> 06'37	-2°-28'-58	opposition	770 Jan 23 j 01:55	7° <del>♂</del> 01'58	1°09'41
min. Earth dist.	763 Nov 01 j 00:37	12° <del>8</del> 07'08	8.03812 AU	min. Earth dist.	770 Jan 22 j 21:01	7° <del>♂</del> 02'58	8.22665 AU
direct	764 Jan 06 j 09:45	8° <del>8</del> 39'31		direct	770 Apr 01 j 10:32	3° <del>♂</del> 32'58	
	764 Apr 04 j 04:58	15° <del>8</del>		evening set	770 Jul 16 j 18:18	11° <del>♂</del> 38'20	
evening set	764 Apr 18 j 14:10	16° <del>8</del> 48'00					
				conjunction	770 Aug 03 j 15:41	13° <del>♂</del> 53'33	1°10'40
conjunction	764 May 06 j 12:12	19° <del>8</del> 07'40	-1°-50'-11	minimum elong	770 Aug 03 j 15:38	13° <del>♂</del> 53'32	1°10'39
minimum elong	764 May 06 j 12:15	19° <del>8</del> 07'41	1°50'12	max. Earth dist.	770 Aug 03 j 21:01	13° <del>♂</del> 55'14	10.27939 AU



	770 Aug 12 j 09:34	15°♈		retrograde	777 Feb 10 j 23:08	7°♍38'46	
morning rise	770 Aug 21 j 09:07	16°♈07'30		opposition	777 Apr 21 j 06:38	4°♍21'13	2°37'34
retrograde	770 Nov 30 j 19:09	23°♈51'13		min. Earth dist.	777 Apr 21 j 07:48	4°♍21'00	8.97289 AU
opposition	771 Feb 05 j 15:47	20°♈27'43	1°43'44	direct	777 Jul 01 j 14:02	0°♍59'27	
min. Earth dist.	771 Feb 05 j 11:23	20°♈28'36	8.33484 AU	evening set	777 Oct 12 j 22:02	8°♍12'14	
direct	771 Apr 15 j 14:37	16°♈59'25					
evening set	771 Jul 30 j 21:59	24°♈58'08		conjunction	777 Oct 29 j 14:41	10°♍09'54	2°03'09
				minimum elong	777 Oct 29 j 14:43	10°♍09'55	2°03'08
conjunction	771 Aug 17 j 14:36	27°♈10'21	1°35'54	max. Earth dist.	777 Oct 29 j 12:38	10°♍09'18	11.00455 AU
minimum elong	771 Aug 17 j 14:33	27°♈10'20	1°35'53	morning rise	777 Nov 15 j 04:16	12°♍06'44	
max. Earth dist.	771 Aug 17 j 18:55	27°♈11'43	10.39209 AU		777 Dec 11 j 14:00	15°♍	
morning rise	771 Sep 04 j 02:42	29°♈21'08		retrograde	778 Feb 22 j 16:28	19°♍04'49	
	771 Sep 09 j 10:18	0°♎		opposition	778 May 03 j 10:11	15°♍47'31	2°22'11
retrograde	771 Dec 13 j 20:31	6°♎55'44		min. Earth dist.	778 May 03 j 12:27	15°♍47'06	9.03389 AU
opposition	772 Feb 18 j 23:44	3°♎33'38	2°11'25		778 May 14 j 04:57	15°♎♍	
min. Earth dist.	772 Feb 18 j 19:42	3°♎34'25	8.45138 AU	direct	778 Jul 13 j 17:35	12°♍26'46	
direct	772 Apr 28 j 11:27	0°♎06'15			778 Sep 09 j 15:35	15°♍	
evening set	772 Aug 12 j 15:13	7°♎57'26		evening set	778 Oct 24 j 09:57	19°♍33'59	
conjunction	772 Aug 30 j 02:48	10°♎06'33	1°55'37	conjunction	778 Nov 10 j 01:01	21°♍30'39	1°48'23
minimum elong	772 Aug 30 j 02:45	10°♎06'32	1°55'37	minimum elong	778 Nov 10 j 01:03	21°♍30'40	1°48'23
max. Earth dist.	772 Aug 30 j 06:35	10°♎07'44	10.51041 AU	max. Earth dist.	778 Nov 09 j 21:33	21°♍29'38	11.05539 AU
morning rise	772 Sep 16 j 09:25	12°♎14'11		morning rise	778 Nov 26 j 13:53	23°♍26'45	
retrograde	772 Dec 25 j 14:19	19°♎40'06			779 Feb 12 j 15:24	0°♏	
opposition	773 Mar 03 j 01:57	16°♎19'19	2°31'47	retrograde	779 Mar 06 j 07:43	0°♏23'20	
min. Earth dist.	773 Mar 02 j 22:59	16°♎19'53	8.57076 AU		779 Mar 28 j 07:06	30°♎♍	
direct	773 May 12 j 01:13	12°♎52'59		opposition	779 May 15 j 11:38	27°♍06'05	2°01'27
evening set	773 Aug 25 j 21:40	20°♎36'06		min. Earth dist.	779 May 15 j 15:24	27°♍05'23	9.07371 AU
				direct	779 Jul 25 j 18:12	23°♍46'11	
conjunction	773 Sep 12 j 04:10	22°♎42'13	2°09'16		779 Oct 28 j 12:57	0°♏	
minimum elong	773 Sep 12 j 04:08	22°♎42'12	2°09'16	evening set	779 Nov 04 j 18:00	0°♏49'08	
max. Earth dist.	773 Sep 12 j 06:52	22°♎43'02	10.62875 AU				
morning rise	773 Sep 29 j 05:42	24°♎46'52		conjunction	779 Nov 21 j 08:07	2°♏45'15	1°29'32
	773 Nov 18 j 11:26	0°♏		minimum elong	779 Nov 21 j 08:10	2°♏45'16	1°29'32
retrograde	774 Jan 07 j 00:22	2°♏04'55		max. Earth dist.	779 Nov 21 j 03:07	2°♏43'47	11.08434 AU
	774 Feb 27 j 09:11	30°♎♎		morning rise	779 Dec 07 j 21:02	4°♏41'03	
opposition	774 Mar 15 j 22:33	28°♎45'17	2°44'24	retrograde	780 Mar 17 j 00:20	11°♏37'41	
min. Earth dist.	774 Mar 15 j 21:08	28°♎45'33	8.68748 AU	opposition	780 May 26 j 11:51	8°♏20'14	1°36'12
direct	774 May 25 j 08:52	25°♎20'05		min. Earth dist.	780 May 26 j 16:11	8°♏19'26	9.09090 AU
	774 Aug 12 j 20:08	0°♏		direct	780 Aug 05 j 16:08	5°♏01'04	
evening set	774 Sep 07 j 17:30	2°♏54'58		evening set	780 Nov 14 j 23:44	12°♏01'05	
conjunction	774 Sep 24 j 19:20	4°♏58'21	2°16'37	conjunction	780 Dec 01 j 13:40	13°♏57'07	1°07'19
minimum elong	774 Sep 24 j 19:19	4°♏58'21	2°16'38	minimum elong	780 Dec 01 j 13:42	13°♏57'08	1°07'19
max. Earth dist.	774 Sep 24 j 20:11	4°♏58'36	10.74188 AU	max. Earth dist.	780 Dec 01 j 08:32	13°♏55'36	11.09031 AU
morning rise	774 Oct 11 j 16:37	7°♏00'22		morning rise	780 Dec 18 j 03:04	15°♏53'02	
retrograde	775 Jan 19 j 04:25	14°♏11'32		retrograde	781 Mar 28 j 18:23	22°♏51'20	
opposition	775 Mar 28 j 13:46	10°♏52'49	2°49'18	opposition	781 Jun 07 j 12:16	19°♏33'26	1°07'19
min. Earth dist.	775 Mar 28 j 13:49	10°♏52'49	8.79640 AU	min. Earth dist.	781 Jun 07 j 16:21	19°♏32'41	9.08487 AU
direct	775 Jun 07 j 08:40	7°♏28'47		direct	781 Aug 17 j 11:10	16°♏14'50	
evening set	775 Sep 20 j 03:17	14°♏55'40		evening set	781 Nov 26 j 04:54	23°♏13'21	
conjunction	775 Oct 07 j 01:11	16°♏56'42	2°17'48	conjunction	781 Dec 12 j 19:08	25°♏09'41	0°42'29
minimum elong	775 Oct 07 j 01:11	16°♏56'42	2°17'49	minimum elong	781 Dec 12 j 19:10	25°♏09'42	0°42'29
max. Earth dist.	775 Oct 07 j 00:10	16°♏56'23	10.84491 AU	max. Earth dist.	781 Dec 12 j 14:12	25°♏08'14	11.07300 AU
morning rise	775 Oct 23 j 19:09	18°♏56'32		morning rise	781 Dec 29 j 09:30	27°♏06'08	
retrograde	776 Jan 31 j 02:28	26°♏01'59			782 Jan 25 j 01:21	0°♑	
opposition	776 Apr 09 j 00:11	22°♏43'57	2°46'50	retrograde	782 Apr 09 j 17:14	4°♑07'39	
min. Earth dist.	776 Apr 09 j 00:51	22°♏43'50	8.89280 AU	opposition	782 Jun 19 j 13:52	0°♑49'07	0°35'45
direct	776 Jun 19 j 02:16	19°♏21'05		min. Earth dist.	782 Jun 19 j 18:13	0°♑48'19	9.05579 AU
evening set	776 Oct 01 j 04:19	26°♏40'31			782 Jun 30 j 19:26	30°♎♏	
				direct	782 Aug 29 j 05:15	27°♏30'51	
conjunction	776 Oct 17 j 23:12	28°♏39'37	2°13'09		782 Oct 24 j 14:17	0°♑	
minimum elong	776 Oct 17 j 23:13	28°♏39'37	2°13'09	evening set	782 Dec 07 j 11:37	4°♑29'25	
max. Earth dist.	776 Oct 17 j 21:33	28°♏39'07	10.93357 AU				
	776 Oct 29 j 05:57	0°♒		conjunction	782 Dec 24 j 02:23	6°♑26'26	0°15'52
morning rise	776 Nov 03 j 14:33	0°♒37'42		minimum elong	782 Dec 24 j 02:23	6°♑26'26	0°15'53



behind sun begin	782 Dec 24 j 00:49	6°♄25'58		direct	788 Nov 07 j 20:04	8°♄52'34	
behind sun end	782 Dec 24 j 03:58	6°♄26'53		evening set	789 Feb 16 j 01:34	16°♄22'19	
max. Earth dist.	782 Dec 23 j 20:26	6°♄24'41	11.03301 AU				
morning rise	783 Jan 09 j 18:18	8°♄23'49		conjunction	789 Mar 05 j 03:58	18°♄30'03	-2°-5'00
retrograde	783 Apr 21 j 18:12	15°♄30'01		minimum elong	789 Mar 05 j 03:56	18°♄30'02	2°05'00
opposition	783 Jul 01 j 17:28	12°♄10'39	0°02'30	max. Earth dist.	789 Mar 05 j 00:16	18°♄28'53	10.44781 AU
min. Earth dist.	783 Jul 01 j 22:38	12°♄09'42	9.00473 AU	morning rise	789 Mar 22 j 11:13	20°♄39'18	
desc. node	783 Jul 29 j 14:19	10°♄14'51		retrograde	789 Jul 07 j 00:15	28°♄37'00	
direct	783 Sep 09 j 21:59	8°♄52'27		opposition	789 Sep 14 j 12:59	25°♄09'55	-2°-41'-47
evening set	783 Dec 18 j 21:22	15°♄52'42		min. Earth dist.	789 Sep 14 j 15:27	25°♄09'26	8.38877 AU
				direct	789 Nov 20 j 18:50	21°♄47'32	
conjunction	784 Jan 04 j 13:02	17°♄50'43	0°-11'-41	evening set	790 Mar 01 j 11:20	29°♄26'16	
minimum elong	784 Jan 04 j 13:01	17°♄50'43	0°11'42		790 Mar 05 j 23:29	0°♄	
behind sun begin	784 Jan 04 j 08:01	17°♄49'14					
behind sun end	784 Jan 04 j 18:02	17°♄52'11		conjunction	790 Mar 18 j 17:36	1°♄36'44	-2°-14'-27
max. Earth dist.	784 Jan 04 j 06:29	17°♄48'47	10.97175 AU	minimum elong	790 Mar 18 j 17:35	1°♄36'43	2°14'27
morning rise	784 Jan 21 j 06:50	19°♄49'22		max. Earth dist.	790 Mar 18 j 15:25	1°♄36'02	10.32885 AU
retrograde	784 May 03 j 00:29	27°♄01'48		morning rise	790 Apr 05 j 04:35	3°♄48'43	
opposition	784 Jul 13 j 00:23	23°♄41'22	0°-31'-19	retrograde	790 Jul 21 j 03:24	11°♄55'34	
min. Earth dist.	784 Jul 13 j 05:43	23°♄40'22	8.93351 AU	opposition	790 Sep 28 j 04:26	8°♄27'19	-2°-49'-37
direct	784 Sep 20 j 19:25	20°♄23'01		min. Earth dist.	790 Sep 28 j 05:31	8°♄27'06	8.27360 AU
evening set	784 Dec 29 j 11:38	27°♄26'27		direct	790 Dec 04 j 01:06	5°♄03'42	
				evening set	791 Mar 15 j 07:52	12°♄51'33	
conjunction	785 Jan 15 j 04:41	29°♄25'49	0°-39'-4				
minimum elong	785 Jan 15 j 04:40	29°♄25'49	0°39'05	conjunction	791 Apr 01 j 18:26	15°♄04'50	-2°-16'-52
max. Earth dist.	785 Jan 14 j 23:05	29°♄24'09	10.89137 AU	minimum elong	791 Apr 01 j 18:26	15°♄04'50	2°16'53
	785 Jan 19 j 22:41	0°♄		max. Earth dist.	791 Apr 01 j 18:03	15°♄04'43	10.21874 AU
morning rise	785 Feb 01 j 00:29	1°♄26'03		morning rise	791 Apr 19 j 09:24	17°♄19'34	
retrograde	785 May 15 j 14:43	8°♄46'03		retrograde	791 Aug 04 j 14:02	25°♄34'06	
opposition	785 Jul 25 j 11:21	5°♄24'24	-1°-4'-29	opposition	791 Oct 12 j 01:26	22°♄04'55	-2°-48'-14
min. Earth dist.	785 Jul 25 j 15:42	5°♄23'35	8.84472 AU	min. Earth dist.	791 Oct 12 j 00:52	22°♄05'02	8.17082 AU
direct	785 Oct 02 j 18:46	2°♄05'42		direct	791 Dec 17 j 13:51	18°♄39'59	
evening set	786 Jan 10 j 08:22	9°♄13'46		evening set	792 Mar 28 j 14:35	26°♄36'32	
conjunction	786 Jan 27 j 03:09	11°♄14'49	-1°-5'-18	conjunction	792 Apr 15 j 05:45	28°♄52'31	-2°-11'-36
minimum elong	786 Jan 27 j 03:07	11°♄14'49	1°05'19	minimum elong	792 Apr 15 j 05:48	28°♄52'32	2°11'38
max. Earth dist.	786 Jan 26 j 22:27	11°♄13'24	10.79482 AU	max. Earth dist.	792 Apr 15 j 07:00	28°♄52'55	10.12477 AU
morning rise	786 Feb 13 j 01:14	13°♄16'56			792 Apr 23 j 22:33	0°♄	
	786 Feb 27 j 22:20	15°♄		morning rise	792 May 03 j 00:56	1°♄09'51	
retrograde	786 May 28 j 11:39	20°♄45'34		retrograde	792 Aug 18 j 04:55	9°♄29'50	
opposition	786 Aug 07 j 03:02	17°♄22'35	-1°-35'-38	opposition	792 Oct 25 j 03:10	6°♄00'01	-2°-37'-3
min. Earth dist.	786 Aug 07 j 06:31	17°♄21'55	8.74169 AU	min. Earth dist.	792 Oct 25 j 01:14	6°♄00'25	8.08727 AU
	786 Sep 11 j 00:15	15°♄		direct	792 Dec 30 j 10:48	2°♄33'48	
direct	786 Oct 14 j 21:05	14°♄03'17		evening set	793 Apr 12 j 06:15	10°♄37'59	
	786 Nov 17 j 00:59	15°♄					
evening set	787 Jan 22 j 12:55	21°♄17'27		conjunction	793 Apr 30 j 02:04	12°♄56'23	-1°-58'-31
				minimum elong	793 Apr 30 j 02:07	12°♄56'24	1°58'32
conjunction	787 Feb 08 j 09:42	23°♄20'28	-1°-29'-12	max. Earth dist.	793 Apr 30 j 04:32	12°♄57'11	10.05318 AU
minimum elong	787 Feb 08 j 09:40	23°♄20'27	1°29'12		793 May 15 j 23:32	15°♄	
max. Earth dist.	787 Feb 08 j 05:04	23°♄19'03	10.68583 AU	morning rise	793 May 18 j 01:15	15°♄15'54	
morning rise	787 Feb 25 j 10:29	25°♄24'43		retrograde	793 Sep 01 j 21:40	23°♄38'37	
	787 Apr 09 j 00:35	0°♄		opposition	793 Nov 08 j 08:15	20°♄08'33	-2°-16'-12
retrograde	787 Jun 10 j 16:33	3°♄02'47		min. Earth dist.	793 Nov 08 j 05:33	20°♄09'06	8.02842 AU
	787 Aug 15 j 07:55	30°♄		direct	794 Jan 13 j 15:20	16°♄41'07	
opposition	787 Aug 20 j 00:20	29°♄38'25	-2°-3'-16	evening set	794 Apr 27 j 05:09	24°♄51'21	
min. Earth dist.	787 Aug 20 j 03:29	29°♄37'49	8.62834 AU				
direct	787 Oct 27 j 05:25	26°♄18'16		conjunction	794 May 15 j 05:05	27°♄11'37	-1°-38'-5
	788 Jan 02 j 12:18	0°♄		minimum elong	794 May 15 j 05:09	27°♄11'39	1°38'06
evening set	788 Feb 04 j 02:17	3°♄39'44		max. Earth dist.	794 May 15 j 08:45	27°♄12'49	10.00857 AU
				morning rise	794 Jun 02 j 07:29	29°♄32'41	
conjunction	788 Feb 21 j 01:31	5°♄44'58	-1°-49'-31		794 Jun 05 j 21:13	0°♄	
minimum elong	788 Feb 21 j 01:28	5°♄44'57	1°49'31	retrograde	794 Sep 16 j 13:27	7°♄55'10	
max. Earth dist.	788 Feb 20 j 20:52	5°♄43'31	10.56862 AU	opposition	794 Nov 22 j 14:57	4°♄25'15	-1°-46'-43
morning rise	788 Mar 09 j 05:21	7°♄51'38		min. Earth dist.	794 Nov 22 j 11:34	4°♄25'58	7.99814 AU
retrograde	788 Jun 23 j 04:45	15°♄39'32		direct	795 Jan 28 j 01:24	0°♄56'47	
opposition	788 Sep 01 j 03:38	12°♄13'46	-2°-25'-51	evening set	795 May 12 j 08:35	9°♄11'02	
min. Earth dist.	788 Sep 01 j 06:45	12°♄13'10	8.50907 AU				



conjunction	795 May 30 j 11:42	11° $\Pi$ 32'26	-1°-11'-30	retrograde	800 Dec 07 j 05:29	1° $\mp$ 08'41	
minimum elong	795 May 30 j 11:45	11° $\Pi$ 32'27	1°11'32		801 Jan 12 j 10:50	30° $\mathbb{R}$ 0	
max. Earth dist.	795 May 30 j 16:33	11° $\Pi$ 34'01	9.99387 AU	opposition	801 Feb 12 j 05:03	27° $\Omega$ 45'25	1°59'19
morning rise	795 Jun 17 j 16:03	13° $\Pi$ 54'11		min. Earth dist.	801 Feb 12 j 01:03	27° $\Omega$ 46'13	8.38656 AU
retrograde	795 Oct 01 j 02:49	22° $\Pi$ 13'36		direct	801 Apr 22 j 10:06	24° $\Omega$ 17'05	
opposition	795 Dec 06 j 21:44	18° $\Pi$ 44'12	-1°-10'-31		801 Jul 19 j 01:33	0° $\mp$	
min. Earth dist.	795 Dec 06 j 17:32	18° $\Pi$ 45'05	7.99842 AU	evening set	801 Aug 06 j 16:22	2° $\mp$ 11'55	
direct	796 Feb 11 j 14:21	15° $\Pi$ 14'56					
evening set	796 May 26 j 13:38	23° $\Pi$ 30'56		conjunction	801 Aug 24 j 06:18	4° $\mp$ 22'33	1°47'04
				minimum elong	801 Aug 24 j 06:15	4° $\mp$ 22'32	1°47'04
conjunction	796 Jun 13 j 18:31	25° $\Pi$ 52'32	0°-40'-31	max. Earth dist.	801 Aug 24 j 10:32	4° $\mp$ 23'52	10.44624 AU
minimum elong	796 Jun 13 j 18:33	25° $\Pi$ 52'32	0°40'32	morning rise	801 Sep 10 j 15:35	6° $\mp$ 31'43	
max. Earth dist.	796 Jun 14 j 00:27	25° $\Pi$ 54'28	10.00989 AU	retrograde	801 Dec 20 j 01:08	14° $\mp$ 01'35	
morning rise	796 Jul 01 j 23:15	28° $\Pi$ 14'01		opposition	802 Feb 25 j 09:44	10° $\mp$ 39'48	2°23'09
	796 Jul 16 j 02:38	0° $\mathfrak{S}$		min. Earth dist.	802 Feb 25 j 06:22	10° $\mp$ 40'27	8.50779 AU
retrograde	796 Oct 14 j 12:29	6° $\mathfrak{S}$ 27'53		direct	802 May 06 j 04:09	7° $\mp$ 12'33	
opposition	796 Dec 20 j 02:49	2° $\mathfrak{S}$ 59'19	0°-30'-6	evening set	802 Aug 20 j 03:28	14° $\mp$ 59'28	
min. Earth dist.	796 Dec 19 j 21:41	3° $\mathfrak{S}$ 00'22	8.02901 AU				
	797 Feb 01 j 15:37	30° $\mathbb{R}$ $\Pi$		conjunction	802 Sep 06 j 12:15	17° $\mp$ 06'59	2°03'35
direct	797 Feb 25 j 04:45	29° $\Pi$ 29'34		minimum elong	802 Sep 06 j 12:13	17° $\mp$ 06'58	2°03'35
	797 Mar 20 j 16:44	0° $\mathfrak{S}$		max. Earth dist.	802 Sep 06 j 15:17	17° $\mp$ 07'55	10.56809 AU
evening set	797 Jun 10 j 17:37	7° $\mathfrak{S}$ 45'01		morning rise	802 Sep 23 j 16:21	19° $\mp$ 13'03	
				retrograde	803 Jan 01 j 13:41	26° $\mp$ 34'39	
conjunction	797 Jun 28 j 22:29	10° $\mathfrak{S}$ 05'49	0°-7'-18	opposition	803 Mar 10 j 08:35	23° $\mp$ 14'12	2°39'23
minimum elong	797 Jun 28 j 22:30	10° $\mathfrak{S}$ 05'49	0°07'20	min. Earth dist.	803 Mar 10 j 05:35	23° $\mp$ 14'47	8.62949 AU
behind sun begin	797 Jun 28 j 15:47	10° $\mathfrak{S}$ 03'40		direct	803 May 19 j 15:26	19° $\mp$ 48'14	
behind sun end	797 Jun 29 j 05:13	10° $\mathfrak{S}$ 07'59		evening set	803 Sep 02 j 03:58	27° $\mp$ 26'55	
max. Earth dist.	797 Jun 29 j 05:20	10° $\mathfrak{S}$ 08'01	10.05517 AU				
morning rise	797 Jul 17 j 01:45	12° $\mathfrak{S}$ 26'05		conjunction	803 Sep 19 j 08:01	29° $\mp$ 31'33	2°13'52
asc. node	797 Sep 19 j 02:48	19° $\mathfrak{S}$ 07'09		minimum elong	803 Sep 19 j 08:00	29° $\mp$ 31'33	2°13'53
retrograde	797 Oct 28 j 16:09	20° $\mathfrak{S}$ 32'28		max. Earth dist.	803 Sep 19 j 10:25	29° $\mp$ 32'17	10.68753 AU
opposition	798 Jan 03 j 04:37	17° $\mathfrak{S}$ 04'59	0°11'40		803 Sep 23 j 05:24	0° $\underline{\Omega}$	
min. Earth dist.	798 Jan 02 j 22:47	17° $\mathfrak{S}$ 06'11	8.08761 AU	morning rise	803 Oct 06 j 07:22	1° $\underline{\Omega}$ 34'47	
direct	798 Mar 11 j 18:09	13° $\mathfrak{S}$ 35'05		retrograde	804 Jan 13 j 21:55	8° $\underline{\Omega}$ 49'00	
evening set	798 Jun 25 j 17:22	21° $\mathfrak{S}$ 47'51		opposition	804 Mar 22 j 01:53	5° $\underline{\Omega}$ 29'46	2°47'50
				min. Earth dist.	804 Mar 21 j 23:41	5° $\underline{\Omega}$ 30'11	8.74589 AU
conjunction	798 Jul 13 j 20:24	24° $\mathfrak{S}$ 06'57	0°26'02	direct	804 May 31 j 17:20	2° $\underline{\Omega}$ 05'09	
minimum elong	798 Jul 13 j 20:23	24° $\mathfrak{S}$ 06'57	0°26'01	evening set	804 Sep 13 j 18:25	9° $\underline{\Omega}$ 35'43	
max. Earth dist.	798 Jul 14 j 03:45	24° $\mathfrak{S}$ 09'19	10.12651 AU				
morning rise	798 Jul 31 j 20:31	26° $\mathfrak{S}$ 25'08		conjunction	804 Sep 30 j 18:17	11° $\underline{\Omega}$ 37'48	2°17'54
	798 Aug 31 j 02:27	0° $\Omega$		minimum elong	804 Sep 30 j 18:16	11° $\underline{\Omega}$ 37'48	2°17'54
retrograde	798 Nov 11 j 12:31	4° $\Omega$ 22'48		max. Earth dist.	804 Sep 30 j 19:55	11° $\underline{\Omega}$ 38'18	10.79911 AU
opposition	799 Jan 17 j 02:13	0° $\Omega$ 56'37	0°52'01	morning rise	804 Oct 17 j 13:38	13° $\underline{\Omega}$ 38'36	
min. Earth dist.	799 Jan 16 j 20:23	0° $\Omega$ 57'48	8.17033 AU	retrograde	805 Jan 24 j 23:29	20° $\underline{\Omega}$ 46'32	
	799 Jan 28 j 19:12	30° $\mathbb{R}$ $\mathfrak{S}$		opposition	805 Apr 03 j 14:33	17° $\underline{\Omega}$ 28'18	2°48'44
direct	799 Mar 26 j 04:48	27° $\mathfrak{S}$ 26'55		min. Earth dist.	805 Apr 03 j 13:59	17° $\underline{\Omega}$ 28'25	8.85190 AU
	799 May 20 j 08:47	0° $\Omega$		direct	805 Jun 13 j 12:49	14° $\underline{\Omega}$ 05'04	
evening set	799 Jul 10 j 10:07	5° $\Omega$ 35'04		evening set	805 Sep 25 j 23:38	21° $\underline{\Omega}$ 27'54	
conjunction	799 Jul 28 j 09:46	7° $\Omega$ 51'44	0°57'15	conjunction	805 Oct 12 j 19:54	23° $\underline{\Omega}$ 27'50	2°15'54
minimum elong	799 Jul 28 j 09:43	7° $\Omega$ 51'43	0°57'14	minimum elong	805 Oct 12 j 19:55	23° $\underline{\Omega}$ 27'50	2°15'54
max. Earth dist.	799 Jul 28 j 16:52	7° $\Omega$ 53'59	10.21931 AU	max. Earth dist.	805 Oct 12 j 19:48	23° $\underline{\Omega}$ 27'48	10.89816 AU
morning rise	799 Aug 15 j 05:30	10° $\Omega$ 07'11		morning rise	805 Oct 29 j 12:17	25° $\underline{\Omega}$ 26'40	
	799 Sep 27 j 19:59	15° $\Omega$			805 Dec 12 j 09:36	0° $\mathbb{M}$	
retrograde	799 Nov 25 j 01:02	17° $\Omega$ 55'32		retrograde	806 Feb 05 j 20:53	2° $\mathbb{M}$ 29'36	
	800 Jan 24 j 17:27	15° $\mathbb{R}$ $\Omega$			806 Apr 05 j 04:55	30° $\mathbb{R}$ $\underline{\Omega}$	
opposition	800 Jan 30 j 18:34	14° $\Omega$ 30'47	1°28'32	opposition	806 Apr 15 j 23:08	29° $\underline{\Omega}$ 12'08	2°42'32
min. Earth dist.	800 Jan 30 j 13:26	14° $\Omega$ 31'49	8.27198 AU	min. Earth dist.	806 Apr 16 j 00:08	29° $\underline{\Omega}$ 11'57	8.94327 AU
direct	800 Apr 08 j 10:08	11° $\Omega$ 01'36		direct	806 Jun 26 j 02:50	25° $\underline{\Omega}$ 50'10	
	800 Jun 18 j 05:39	15° $\Omega$			806 Sep 09 j 11:21	0° $\mathbb{M}$	
evening set	800 Jul 23 j 18:17	19° $\Omega$ 03'38		evening set	806 Oct 07 j 21:00	3° $\mathbb{M}$ 05'59	
conjunction	800 Aug 10 j 13:23	21° $\Omega$ 17'24	1°24'42	conjunction	806 Oct 24 j 14:30	5° $\mathbb{M}$ 04'13	2°08'18
minimum elong	800 Aug 10 j 13:19	21° $\Omega$ 17'23	1°24'41	minimum elong	806 Oct 24 j 14:31	5° $\mathbb{M}$ 04'14	2°08'18
max. Earth dist.	800 Aug 10 j 19:21	21° $\Omega$ 19'17	10.32792 AU	max. Earth dist.	806 Oct 24 j 12:29	5° $\mathbb{M}$ 03'38	10.98087 AU
morning rise	800 Aug 28 j 04:00	23° $\Omega$ 29'46		morning rise	806 Nov 10 j 04:56	7° $\mathbb{M}$ 01'34	
	800 Nov 01 j 12:10	0° $\mp$		retrograde	807 Feb 17 j 14:30	14° $\mathbb{M}$ 00'49	



opposition	807 Apr 28 j 04:05	10° $\mathbb{M}$ 43'50	2°29'52	min. Earth dist.	813 Jul 07 j 23:32	18° $\mathfrak{Z}$ 37'16	8.96504 AU
min. Earth dist.	807 Apr 28 j 05:59	10° $\mathbb{M}$ 43'29	9.01642 AU	direct	813 Sep 15 j 18:26	15° $\mathfrak{Z}$ 20'02	
direct	807 Jul 08 j 10:37	7° $\mathbb{M}$ 23'03		evening set	813 Dec 24 j 13:18	22° $\mathfrak{Z}$ 22'07	
evening set	807 Oct 19 j 11:48	14° $\mathbb{M}$ 32'45					
	807 Oct 23 j 09:51	15° $\mathbb{M}$		conjunction	814 Jan 10 j 05:44	24° $\mathfrak{Z}$ 20'55	0°-26'-33
				minimum elong	814 Jan 10 j 05:43	24° $\mathfrak{Z}$ 20'55	0°26'35
conjunction	807 Nov 05 j 03:31	16° $\mathbb{M}$ 29'47	1°55'41	max. Earth dist.	814 Jan 09 j 22:34	24° $\mathfrak{Z}$ 18'47	10.92455 AU
minimum elong	807 Nov 05 j 03:33	16° $\mathbb{M}$ 29'48	1°55'40	morning rise	814 Jan 27 j 00:33	26° $\mathfrak{Z}$ 20'28	
max. Earth dist.	807 Nov 05 j 00:36	16° $\mathbb{M}$ 28'56	11.04388 AU		814 Mar 01 j 21:10	0° $\approx$	
morning rise	807 Nov 21 j 16:44	18° $\mathbb{M}$ 26'08		retrograde	814 May 10 j 06:19	3° $\approx$ 37'09	
retrograde	808 Feb 29 j 07:46	25° $\mathbb{M}$ 23'10		opposition	814 Jul 20 j 03:18	0° $\approx$ 15'57	0°-49'-25
opposition	808 May 09 j 06:33	22° $\mathbb{M}$ 06'22	2°11'31	min. Earth dist.	814 Jul 20 j 09:07	0° $\approx$ 14'52	8.87911 AU
min. Earth dist.	808 May 09 j 08:53	22° $\mathbb{M}$ 05'57	9.06821 AU		814 Jul 23 j 16:32	30° $\mathbb{R}$ $\mathfrak{Z}$	
direct	808 Jul 19 j 14:35	18° $\mathbb{M}$ 46'35		direct	814 Sep 27 j 15:15	26° $\mathfrak{Z}$ 57'13	
evening set	808 Oct 29 j 21:48	25° $\mathbb{M}$ 51'21			814 Nov 28 j 10:07	0° $\approx$	
				evening set	815 Jan 05 j 07:10	4° $\approx$ 03'23	
conjunction	808 Nov 15 j 12:24	27° $\mathbb{M}$ 47'38	1°38'38				
minimum elong	808 Nov 15 j 12:27	27° $\mathbb{M}$ 47'38	1°38'38	conjunction	815 Jan 22 j 01:02	6° $\approx$ 03'44	0°-53'-28
max. Earth dist.	808 Nov 15 j 08:58	27° $\mathbb{M}$ 46'37	11.08434 AU	minimum elong	815 Jan 22 j 01:00	6° $\approx$ 03'43	0°53'30
morning rise	808 Dec 02 j 01:04	29° $\mathbb{M}$ 43'25		max. Earth dist.	815 Jan 21 j 17:36	6° $\approx$ 01'29	10.83029 AU
	808 Dec 04 j 10:57	0° $\mathfrak{Z}$		morning rise	815 Feb 07 j 22:10	8° $\approx$ 05'05	
retrograde	809 Mar 12 j 01:39	6° $\mathfrak{Z}$ 39'46			815 Apr 28 j 04:43	15° $\approx$	
opposition	809 May 21 j 07:37	3° $\mathfrak{Z}$ 22'55	1°48'16	retrograde	815 May 22 j 22:04	15° $\approx$ 30'00	
min. Earth dist.	809 May 21 j 11:15	3° $\mathfrak{Z}$ 22'15	9.09629 AU		815 Jun 16 j 22:22	15° $\mathbb{R}$ $\approx$	
direct	809 Jul 31 j 12:48	0° $\mathfrak{Z}$ 03'57		opposition	815 Aug 01 j 16:52	12° $\approx$ 07'19	-1°-21'-42
evening set	809 Nov 10 j 04:50	7° $\mathfrak{Z}$ 05'06		min. Earth dist.	815 Aug 01 j 22:40	12° $\approx$ 06'13	8.77756 AU
				direct	815 Oct 09 j 16:54	8° $\approx$ 47'53	
conjunction	809 Nov 26 j 18:48	9° $\mathfrak{Z}$ 01'05	1°17'53		816 Jan 08 j 21:10	15° $\approx$	
minimum elong	809 Nov 26 j 18:50	9° $\mathfrak{Z}$ 01'06	1°17'54	evening set	816 Jan 17 j 07:57	15° $\approx$ 59'38	
max. Earth dist.	809 Nov 26 j 13:32	8° $\mathfrak{Z}$ 59'32	11.10031 AU				
morning rise	809 Dec 13 j 07:47	10° $\mathfrak{Z}$ 56'50		conjunction	816 Feb 03 j 03:46	18° $\approx$ 01'52	-1°-18'-36
retrograde	810 Mar 23 j 18:04	17° $\mathfrak{Z}$ 54'06		minimum elong	816 Feb 03 j 03:44	18° $\approx$ 01'51	1°18'37
opposition	810 Jun 02 j 08:16	14° $\mathfrak{Z}$ 36'56	1°20'58	max. Earth dist.	816 Feb 02 j 21:32	17° $\approx$ 59'58	10.72215 AU
min. Earth dist.	810 Jun 02 j 13:31	14° $\mathfrak{Z}$ 35'58	9.09935 AU	morning rise	816 Feb 20 j 03:22	20° $\approx$ 05'16	
direct	810 Aug 12 j 08:10	11° $\mathfrak{Z}$ 18'31		retrograde	816 Jun 03 j 23:07	27° $\approx$ 39'28	
evening set	810 Nov 21 j 10:29	18° $\mathfrak{Z}$ 17'38		opposition	816 Aug 13 j 11:46	24° $\approx$ 15'14	-1°-51'-11
				min. Earth dist.	816 Aug 13 j 16:25	24° $\approx$ 14'21	8.66437 AU
conjunction	810 Dec 08 j 00:24	20° $\mathfrak{Z}$ 13'45	0°54'10	direct	816 Oct 21 j 00:26	20° $\approx$ 54'57	
minimum elong	810 Dec 08 j 00:26	20° $\mathfrak{Z}$ 13'45	0°54'11	evening set	817 Jan 28 j 17:01	28° $\approx$ 13'32	
max. Earth dist.	810 Dec 07 j 17:27	20° $\mathfrak{Z}$ 11'42	11.09117 AU		817 Feb 12 j 05:09	0° $\mathfrak{H}$	
morning rise	810 Dec 24 j 14:23	22° $\mathfrak{Z}$ 09'54					
retrograde	811 Apr 04 j 14:22	29° $\mathfrak{Z}$ 09'46		conjunction	817 Feb 14 j 15:16	0° $\mathfrak{H}$ 17'56	-1°-40'-45
opposition	811 Jun 14 j 09:30	25° $\mathfrak{Z}$ 51'58	0°50'32	minimum elong	817 Feb 14 j 15:13	0° $\mathfrak{H}$ 17'55	1°40'45
min. Earth dist.	811 Jun 14 j 15:37	25° $\mathfrak{Z}$ 50'51	9.07751 AU	max. Earth dist.	817 Feb 14 j 10:39	0° $\mathfrak{H}$ 16'31	10.60448 AU
direct	811 Aug 24 j 04:10	22° $\mathfrak{Z}$ 33'52		morning rise	817 Mar 03 j 17:36	2° $\mathfrak{H}$ 23'39	
evening set	811 Dec 02 j 16:39	29° $\mathfrak{Z}$ 32'27		retrograde	817 Jun 17 j 08:49	10° $\mathfrak{H}$ 07'45	
	811 Dec 06 j 15:46	0° $\mathfrak{Z}$		opposition	817 Aug 26 j 12:26	6° $\mathfrak{H}$ 42'00	-2°-16'-20
				min. Earth dist.	817 Aug 26 j 15:34	6° $\mathfrak{H}$ 41'24	8.54420 AU
conjunction	811 Dec 19 j 07:06	1° $\mathfrak{Z}$ 29'06	0°28'16	direct	817 Nov 02 j 11:28	3° $\mathfrak{H}$ 20'42	
minimum elong	811 Dec 19 j 07:07	1° $\mathfrak{Z}$ 29'06	0°28'16	evening set	818 Feb 10 j 11:52	10° $\mathfrak{H}$ 47'16	
max. Earth dist.	811 Dec 19 j 00:08	1° $\mathfrak{Z}$ 27'03	11.05762 AU				
morning rise	812 Jan 04 j 22:17	3° $\mathfrak{Z}$ 26'02		conjunction	818 Feb 27 j 12:56	12° $\mathfrak{H}$ 54'04	-1°-58'-37
retrograde	812 Apr 15 j 14:01	10° $\mathfrak{Z}$ 30'03		minimum elong	818 Feb 27 j 12:54	12° $\mathfrak{H}$ 54'03	1°58'37
opposition	812 Jun 25 j 12:20	7° $\mathfrak{Z}$ 11'20	0°17'55	max. Earth dist.	818 Feb 27 j 09:17	12° $\mathfrak{H}$ 52'56	10.48238 AU
min. Earth dist.	812 Jun 25 j 18:05	7° $\mathfrak{Z}$ 10'16	9.03205 AU	morning rise	818 Mar 16 j 18:31	15° $\mathfrak{H}$ 02'21	
direct	812 Sep 03 j 22:31	3° $\mathfrak{Z}$ 53'18		retrograde	818 Jul 01 j 01:44	22° $\mathfrak{H}$ 56'25	
evening set	812 Dec 13 j 01:03	10° $\mathfrak{Z}$ 52'52		opposition	818 Sep 08 j 19:09	19° $\mathfrak{H}$ 29'15	-2°-35'-32
				min. Earth dist.	818 Sep 08 j 21:07	19° $\mathfrak{H}$ 28'51	8.42240 AU
conjunction	812 Dec 29 j 16:23	12° $\mathfrak{Z}$ 50'26	0°01'04	direct	818 Nov 15 j 05:57	16° $\mathfrak{H}$ 06'48	
minimum elong	812 Dec 29 j 16:24	12° $\mathfrak{Z}$ 50'26	0°01'04	evening set	819 Feb 23 j 17:04	23° $\mathfrak{H}$ 42'08	
behind sun begin	812 Dec 29 j 09:25	12° $\mathfrak{Z}$ 48'23					
behind sun end	812 Dec 29 j 23:22	12° $\mathfrak{Z}$ 52'28		conjunction	819 Mar 12 j 21:29	25° $\mathfrak{H}$ 51'35	-2°-10'-59
max. Earth dist.	812 Dec 29 j 09:43	12° $\mathfrak{Z}$ 48'28	11.00130 AU	minimum elong	819 Mar 12 j 21:28	25° $\mathfrak{H}$ 51'34	2°11'00
desc. node	813 Jan 12 j 19:29	14° $\mathfrak{Z}$ 30'32		max. Earth dist.	819 Mar 12 j 18:30	25° $\mathfrak{H}$ 50'38	10.36162 AU
morning rise	813 Jan 15 j 09:08	14° $\mathfrak{Z}$ 48'29		morning rise	819 Mar 30 j 06:46	28° $\mathfrak{H}$ 02'33	
retrograde	813 Apr 27 j 19:45	21° $\mathfrak{Z}$ 58'09			819 Apr 15 j 12:52	0° $\mathbb{Y}$	
opposition	813 Jul 07 j 18:01	18° $\mathfrak{Z}$ 38'17	0°-15'-46	retrograde	819 Jul 15 j 02:13	6° $\mathbb{Y}$ 06'08	



opposition	819 Sep 22 j 08:13	2°♊37'43	-2°-47'-16	minimum elong	825 Jun 07 j 07:12	19°♊41'46	0°54'52
min. Earth dist.	819 Sep 22 j 09:26	2°♊37'29	8.30495 AU	max. Earth dist.	825 Jun 07 j 14:51	19°♊44'15	9.99783 AU
	819 Oct 30 j 01:26	30°♊♋		morning rise	825 Jun 25 j 11:50	22°♊03'33	
direct	819 Nov 28 j 08:22	29°♊14'03			825 Sep 19 j 08:25	0°♋	
	819 Dec 27 j 06:39	0°♊		retrograde	825 Oct 08 j 13:36	0°♋20'37	
evening set	820 Mar 08 j 08:44	6°♊58'28			825 Oct 27 j 17:22	30°♊♋	
				opposition	825 Dec 14 j 03:56	26°♊51'51	0°-48'-32
conjunction	820 Mar 25 j 17:09	9°♊10'39	-2°-16'-44	min. Earth dist.	825 Dec 13 j 22:02	26°♊53'04	8.01248 AU
minimum elong	820 Mar 25 j 17:09	9°♊10'39	2°16'45	direct	826 Feb 18 j 23:33	23°♊22'36	
max. Earth dist.	820 Mar 25 j 15:36	9°♊10'10	10.24846 AU		826 May 22 j 03:31	0°♋	
morning rise	820 Apr 12 j 06:28	11°♊24'23		evening set	826 Jun 04 j 08:23	1°♋38'53	
retrograde	820 Jul 28 j 09:48	19°♊36'20					
opposition	820 Oct 05 j 03:13	16°♊06'56	-2°-50'-12	conjunction	826 Jun 22 j 13:24	4°♋00'10	0°-22'-17
min. Earth dist.	820 Oct 05 j 03:24	16°♊06'54	8.19820 AU	minimum elong	826 Jun 22 j 13:25	4°♋00'10	0°22'18
direct	820 Dec 10 j 18:35	12°♊42'01		max. Earth dist.	826 Jun 22 j 21:15	4°♋02'43	10.03424 AU
evening set	821 Mar 22 j 11:04	20°♊35'19		morning rise	826 Jul 10 j 17:27	6°♋21'08	
				retrograde	826 Oct 22 j 20:24	14°♋31'20	
conjunction	821 Apr 09 j 00:04	22°♊50'16	-2°-15'-1	opposition	826 Dec 28 j 08:04	11°♋03'44	0°-6'-57
minimum elong	821 Apr 09 j 00:06	22°♊50'16	2°15'02	min. Earth dist.	826 Dec 28 j 02:17	11°♋04'55	8.06289 AU
max. Earth dist.	821 Apr 09 j 00:32	22°♊50'25	10.14932 AU	asc. node	827 Mar 01 j 10:01	7°♋35'18	
morning rise	821 Apr 26 j 17:34	25°♊06'39		direct	827 Mar 05 j 14:49	7°♋34'18	
	821 Jun 08 j 10:19	0°♋		evening set	827 Jun 19 j 10:57	15°♋48'40	
retrograde	821 Aug 11 j 22:03	3°♋25'03					
	821 Oct 18 j 02:38	30°♋♊		conjunction	827 Jul 07 j 14:50	18°♋08'35	0°11'20
opposition	821 Oct 19 j 03:10	29°♊55'00	-2°-43'-27	minimum elong	827 Jul 07 j 14:49	18°♋08'34	0°11'20
min. Earth dist.	821 Oct 19 j 01:59	29°♊55'14	8.10840 AU	behind sun begin	827 Jul 07 j 09:32	18°♋06'53	
direct	821 Dec 24 j 13:27	26°♊28'53		behind sun end	827 Jul 07 j 20:06	18°♋10'16	
	822 Feb 26 j 06:49	0°♋		max. Earth dist.	827 Jul 07 j 22:13	18°♋10'57	10.09822 AU
evening set	822 Apr 05 j 23:05	4°♋30'19		morning rise	827 Jul 25 j 16:35	20°♋27'46	
				retrograde	827 Nov 05 j 19:36	28°♋29'32	
conjunction	822 Apr 23 j 16:54	6°♋47'49	-2°-5'-26	opposition	828 Jan 11 j 08:06	25°♋03'15	0°34'22
minimum elong	822 Apr 23 j 16:57	6°♋47'50	2°05'27	min. Earth dist.	828 Jan 11 j 02:26	25°♋04'24	8.13884 AU
max. Earth dist.	822 Apr 23 j 19:49	6°♋48'46	10.07023 AU	direct	828 Mar 19 j 04:08	21°♋33'55	
morning rise	822 May 11 j 14:25	9°♋06'34		evening set	828 Jul 03 j 07:36	29°♋44'18	
	822 Jul 03 j 16:43	15°♋			828 Jul 05 j 09:36	0°♌	
retrograde	822 Aug 26 j 13:49	17°♋28'57					
	822 Oct 20 j 16:36	15°♋♋		conjunction	828 Jul 21 j 08:47	2°♌02'03	0°43'43
opposition	822 Nov 02 j 07:12	13°♋58'37	-2°-26'-51	minimum elong	828 Jul 21 j 08:45	2°♌02'02	0°43'43
min. Earth dist.	822 Nov 02 j 04:09	13°♋59'14	8.04121 AU	max. Earth dist.	828 Jul 21 j 15:23	2°♌04'10	10.18477 AU
direct	823 Jan 07 j 15:12	10°♋31'27		morning rise	828 Aug 08 j 06:46	4°♌18'44	
	823 Mar 21 j 08:50	15°♋		retrograde	828 Nov 18 j 11:19	12°♌11'14	
evening set	823 Apr 20 j 19:09	18°♋39'37		opposition	829 Jan 24 j 03:05	8°♌46'21	1°12'52
				min. Earth dist.	829 Jan 23 j 21:44	8°♌47'25	8.23431 AU
conjunction	823 May 08 j 17:27	20°♋59'16	-1°-48'-11	direct	829 Apr 02 j 12:37	5°♌17'25	
minimum elong	823 May 08 j 17:31	20°♋59'17	1°48'13	evening set	829 Jul 17 j 20:13	13°♌22'16	
max. Earth dist.	823 May 08 j 22:37	21°♋00'57	10.01641 AU		829 Jul 30 j 19:42	15°♌	
morning rise	823 May 26 j 18:28	23°♋19'50					
	823 Jul 28 j 03:56	0°♌		conjunction	829 Aug 04 j 17:24	15°♌37'18	1°13'02
retrograde	823 Sep 10 j 07:08	1°♌43'22		minimum elong	829 Aug 04 j 17:21	15°♌37'17	1°13'01
	823 Oct 24 j 23:37	30°♌♋		max. Earth dist.	829 Aug 04 j 23:00	15°♌39'04	10.28723 AU
opposition	823 Nov 16 j 13:49	28°♋13'10	-2°-1'-1	morning rise	829 Aug 22 j 10:27	17°♌51'01	
min. Earth dist.	823 Nov 16 j 09:09	28°♋14'08	8.00122 AU	retrograde	829 Dec 01 j 20:18	25°♌34'09	
direct	824 Jan 21 j 22:10	24°♋45'06		opposition	830 Feb 06 j 16:28	22°♌10'43	1°46'23
	824 Apr 10 j 15:52	0°♌		min. Earth dist.	830 Feb 06 j 11:43	22°♌11'40	8.34261 AU
evening set	824 May 04 j 21:18	2°♌58'11		direct	830 Apr 16 j 15:23	18°♌42'29	
				evening set	830 Jul 31 j 23:16	26°♌40'43	
conjunction	824 May 22 j 23:18	5°♌19'18	-1°-24'-9				
minimum elong	824 May 22 j 23:22	5°♌19'19	1°24'10	conjunction	830 Aug 18 j 15:39	28°♌52'45	1°37'47
max. Earth dist.	824 May 23 j 06:05	5°♌21'31	9.99170 AU	minimum elong	830 Aug 18 j 15:35	28°♌52'44	1°37'47
morning rise	824 Jun 10 j 02:51	7°♌40'57		max. Earth dist.	830 Aug 18 j 20:23	28°♌54'14	10.39948 AU
retrograde	824 Sep 24 j 00:03	16°♌02'38			830 Aug 27 j 14:33	0°♍	
opposition	824 Nov 29 j 21:15	12°♌32'58	-1°-27'-29	morning rise	830 Sep 05 j 03:16	1°♍03'20	
min. Earth dist.	824 Nov 29 j 15:40	12°♌34'07	7.99141 AU	retrograde	830 Dec 14 j 20:50	8°♍37'26	
direct	825 Feb 04 j 08:55	9°♌04'11		opposition	831 Feb 20 j 00:12	5°♍15'26	2°13'26
evening set	825 May 20 j 02:47	17°♌20'02		min. Earth dist.	831 Feb 19 j 20:32	5°♍16'10	8.45819 AU
				direct	831 Apr 30 j 12:07	1°♍48'08	
conjunction	825 Jun 07 j 07:09	19°♌41'45	0°-54'-50	evening set	831 Aug 14 j 15:49	9°♍38'55	



































































































































































conjunction	831 Sep 01 j 03:05	11° $\mathring{M}$ 47'52	1°56'59	conjunction	837 Nov 11 j 01:12	23° $\mathring{M}$ 13'17	1°46'28
minimum elong	831 Sep 01 j 03:02	11° $\mathring{M}$ 47'52	1°56'59	minimum elong	837 Nov 11 j 01:14	23° $\mathring{M}$ 13'18	1°46'28
max. Earth dist.	831 Sep 01 j 06:40	11° $\mathring{M}$ 48'59	10.51639 AU	max. Earth dist.	837 Nov 10 j 20:51	23° $\mathring{M}$ 12'00	11.04785 AU
morning rise	831 Sep 18 j 09:21	13° $\mathring{M}$ 55'21		morning rise	837 Nov 27 j 14:15	25° $\mathring{M}$ 09'30	
retrograde	831 Dec 27 j 13:56	21° $\mathring{M}$ 20'59			838 Jan 14 j 21:10	0° $\mathring{A}$	
opposition	832 Mar 04 j 02:12	18° $\mathring{M}$ 00'17	2°33'05	retrograde	838 Mar 07 j 09:19	2° $\mathring{A}$ 06'39	
min. Earth dist.	832 Mar 04 j 00:11	18° $\mathring{M}$ 00'41	8.57591 AU		838 Apr 30 j 05:12	30° $\mathring{R}$ $\mathring{M}$	
direct	832 May 13 j 02:05	14° $\mathring{M}$ 34'02		opposition	838 May 16 j 13:12	28° $\mathring{M}$ 49'18	1°58'52
evening set	832 Aug 26 j 21:53	22° $\mathring{M}$ 16'54		min. Earth dist.	838 May 16 j 17:02	28° $\mathring{M}$ 48'35	9.06513 AU
				direct	838 Jul 26 j 20:02	25° $\mathring{M}$ 29'22	
conjunction	832 Sep 13 j 04:02	24° $\mathring{M}$ 22'54	2°10'03		838 Oct 13 j 13:27	0° $\mathring{A}$	
minimum elong	832 Sep 13 j 04:00	24° $\mathring{M}$ 22'53	2°10'03	evening set	838 Nov 05 j 18:32	2° $\mathring{A}$ 32'40	
max. Earth dist.	832 Sep 13 j 05:35	24° $\mathring{M}$ 23'22	10.63281 AU				
morning rise	832 Sep 30 j 05:24	26° $\mathring{M}$ 27'27		conjunction	838 Nov 22 j 08:48	4° $\mathring{A}$ 28'57	1°27'13
	832 Oct 31 j 22:46	0° $\mathring{A}$		minimum elong	838 Nov 22 j 08:51	4° $\mathring{A}$ 28'57	1°27'13
retrograde	833 Jan 08 j 00:20	3° $\mathring{A}$ 45'21		max. Earth dist.	838 Nov 22 j 04:09	4° $\mathring{A}$ 27'34	11.07487 AU
opposition	833 Mar 16 j 22:35	0° $\mathring{A}$ 25'49	2°45'00	morning rise	838 Dec 08 j 21:49	6° $\mathring{A}$ 24'54	
min. Earth dist.	833 Mar 16 j 21:56	0° $\mathring{A}$ 25'56	8.69052 AU	retrograde	839 Mar 19 j 02:00	13° $\mathring{A}$ 22'11	
	833 Mar 22 j 12:51	30° $\mathring{R}$ $\mathring{M}$		opposition	839 May 28 j 13:53	10° $\mathring{A}$ 04'34	1°33'10
direct	833 May 26 j 08:30	27° $\mathring{M}$ 00'41		min. Earth dist.	839 May 28 j 17:40	10° $\mathring{A}$ 03'53	9.08053 AU
	833 Jul 27 j 15:07	0° $\mathring{A}$		direct	839 Aug 07 j 17:27	6° $\mathring{A}$ 45'20	
evening set	833 Sep 08 j 17:26	4° $\mathring{A}$ 35'28		evening set	839 Nov 17 j 00:43	13° $\mathring{A}$ 45'48	
conjunction	833 Sep 25 j 19:00	6° $\mathring{A}$ 38'47	2°16'49	conjunction	839 Dec 03 j 14:52	15° $\mathring{A}$ 42'00	1°04'39
minimum elong	833 Sep 25 j 19:00	6° $\mathring{A}$ 38'47	2°16'50	minimum elong	839 Dec 03 j 14:54	15° $\mathring{A}$ 42'01	1°04'40
max. Earth dist.	833 Sep 25 j 18:46	6° $\mathring{A}$ 38'43	10.74370 AU	max. Earth dist.	839 Dec 03 j 10:16	15° $\mathring{A}$ 40'39	11.07916 AU
morning rise	833 Oct 12 j 16:12	8° $\mathring{A}$ 40'47		morning rise	839 Dec 20 j 04:21	17° $\mathring{A}$ 38'06	
retrograde	834 Jan 20 j 03:06	15° $\mathring{A}$ 51'59		retrograde	840 Mar 29 j 22:27	24° $\mathring{A}$ 37'07	
opposition	834 Mar 29 j 13:52	12° $\mathring{A}$ 33'19	2°49'12	opposition	840 Jun 08 j 14:53	21° $\mathring{A}$ 19'04	1°03'55
min. Earth dist.	834 Mar 29 j 13:51	12° $\mathring{A}$ 33'20	8.79705 AU	min. Earth dist.	840 Jun 08 j 18:53	21° $\mathring{A}$ 18'19	9.07298 AU
direct	834 Jun 08 j 09:37	9° $\mathring{A}$ 09'22		direct	840 Aug 18 j 13:05	18° $\mathring{A}$ 00'21	
evening set	834 Sep 21 j 02:58	16° $\mathring{A}$ 36'15		evening set	840 Nov 27 j 06:33	24° $\mathring{A}$ 59'23	
conjunction	834 Oct 08 j 00:48	18° $\mathring{A}$ 37'16	2°17'26	conjunction	840 Dec 13 j 20:50	26° $\mathring{A}$ 55'55	0°39'34
minimum elong	834 Oct 08 j 00:48	18° $\mathring{A}$ 37'16	2°17'26	minimum elong	840 Dec 13 j 20:51	26° $\mathring{A}$ 55'55	0°39'35
max. Earth dist.	834 Oct 07 j 23:47	18° $\mathring{A}$ 36'57	10.84434 AU	max. Earth dist.	840 Dec 13 j 15:26	26° $\mathring{A}$ 54'19	11.06053 AU
morning rise	834 Oct 24 j 18:36	20° $\mathring{A}$ 37'06		morning rise	840 Dec 30 j 11:26	28° $\mathring{A}$ 52'35	
retrograde	835 Feb 01 j 03:24	27° $\mathring{A}$ 42'47			841 Jan 09 j 09:14	0° $\mathring{B}$	
opposition	835 Apr 11 j 00:30	24° $\mathring{A}$ 24'46	2°46'03	retrograde	841 Apr 10 j 20:01	5° $\mathring{B}$ 54'52	
min. Earth dist.	835 Apr 11 j 00:56	24° $\mathring{A}$ 24'42	8.89098 AU	opposition	841 Jun 20 j 17:10	2° $\mathring{B}$ 36'09	0°32'05
direct	835 Jun 21 j 03:22	21° $\mathring{A}$ 01'59		min. Earth dist.	841 Jun 20 j 22:04	2° $\mathring{B}$ 35'15	9.04280 AU
evening set	835 Oct 03 j 04:02	28° $\mathring{A}$ 21'30			841 Jul 31 j 09:18	30° $\mathring{R}$ $\mathring{A}$	
	835 Oct 17 j 01:39	0° $\mathring{M}$		direct	841 Aug 30 j 06:26	29° $\mathring{A}$ 17'45	
conjunction	835 Oct 19 j 22:57	0° $\mathring{M}$ 20'39	2°12'13		841 Sep 28 j 16:20	0° $\mathring{B}$	
minimum elong	835 Oct 19 j 22:58	0° $\mathring{M}$ 20'39	2°12'13	evening set	841 Dec 08 j 13:52	6° $\mathring{B}$ 16'56	
max. Earth dist.	835 Oct 19 j 21:34	0° $\mathring{M}$ 20'14	10.93057 AU				
morning rise	835 Nov 05 j 14:10	2° $\mathring{M}$ 18'47		conjunction	841 Dec 25 j 04:41	8° $\mathring{B}$ 14'07	0°12'49
retrograde	836 Feb 13 j 00:02	9° $\mathring{M}$ 20'10		minimum elong	841 Dec 25 j 04:41	8° $\mathring{B}$ 14'07	0°12'50
opposition	836 Apr 22 j 07:14	6° $\mathring{M}$ 02'37	2°36'07	behind sun begin	841 Dec 25 j 00:15	8° $\mathring{B}$ 12'50	
min. Earth dist.	836 Apr 22 j 08:58	6° $\mathring{M}$ 02'18	8.96867 AU	behind sun end	841 Dec 25 j 09:07	8° $\mathring{B}$ 15'25	
direct	836 Jul 02 j 12:26	2° $\mathring{M}$ 40'53		max. Earth dist.	841 Dec 24 j 22:25	8° $\mathring{B}$ 12'17	11.01967 AU
evening set	836 Oct 13 j 22:00	9° $\mathring{M}$ 53'53		morning rise	842 Jan 10 j 20:53	10° $\mathring{B}$ 11'44	
				retrograde	842 Apr 22 j 21:39	17° $\mathring{B}$ 18'50	
conjunction	836 Oct 30 j 14:35	11° $\mathring{M}$ 51'38	2°01'42	desc. node	842 Jun 18 j 11:24	15° $\mathring{B}$ 02'11	
minimum elong	836 Oct 30 j 14:37	11° $\mathring{M}$ 51'38	2°01'41	opposition	842 Jul 02 j 21:28	13° $\mathring{B}$ 59'15	0°-1'-16
max. Earth dist.	836 Oct 30 j 11:51	11° $\mathring{M}$ 50'49	10.99918 AU	min. Earth dist.	842 Jul 03 j 02:41	13° $\mathring{B}$ 58'17	8.99111 AU
morning rise	836 Nov 16 j 04:16	13° $\mathring{M}$ 48'34		direct	842 Sep 11 j 02:03	10° $\mathring{B}$ 40'54	
	836 Nov 26 j 15:15	15° $\mathring{M}$		evening set	842 Dec 20 j 00:11	17° $\mathring{B}$ 41'48	
retrograde	837 Feb 23 j 16:37	20° $\mathring{M}$ 47'05		conjunction	843 Jan 05 j 16:06	19° $\mathring{B}$ 40'02	0°-14'-46
opposition	837 May 04 j 11:14	17° $\mathring{M}$ 29'45	2°20'08	minimum elong	843 Jan 05 j 16:06	19° $\mathring{B}$ 40'02	0°14'47
min. Earth dist.	837 May 04 j 14:26	17° $\mathring{M}$ 29'09	9.02739 AU	behind sun begin	843 Jan 05 j 13:06	19° $\mathring{B}$ 39'09	
	837 Jun 11 j 12:59	15° $\mathring{R}$ $\mathring{M}$		behind sun end	843 Jan 05 j 19:05	19° $\mathring{B}$ 40'55	
direct	837 Jul 14 j 18:22	14° $\mathring{M}$ 08'58		max. Earth dist.	843 Jan 05 j 10:20	19° $\mathring{B}$ 38'20	10.95793 AU
	837 Aug 16 j 11:59	15° $\mathring{M}$		morning rise	843 Jan 22 j 10:04	21° $\mathring{B}$ 38'55	
evening set	837 Oct 25 j 10:12	21° $\mathring{M}$ 16'31		retrograde	843 May 05 j 06:01	28° $\mathring{B}$ 52'18	
				opposition	843 Jul 15 j 04:56	25° $\mathring{B}$ 31'39	0°-35'-5



min. Earth dist.	843 Jul 15 j 09:28	25°☾30'48	8.91962 AU	opposition	849 Sep 29 j 11:59	10°♊27'18	-2°-49'-44
direct	843 Sep 22 j 23:02	22°☾13'10		min. Earth dist.	849 Sep 29 j 12:07	10°♊27'17	8.27047 AU
evening set	843 Dec 31 j 15:19	29°☾17'18		direct	849 Dec 05 j 06:49	7°♊03'39	
	844 Jan 06 j 15:46	0°♊		evening set	850 Mar 16 j 15:59	14°♊51'49	
conjunction	844 Jan 17 j 08:36	1°♊16'53	0°-42'-4	conjunction	850 Apr 03 j 02:48	17°♊05'11	-2°-16'-33
minimum elong	844 Jan 17 j 08:34	1°♊16'53	0°42'06	minimum elong	850 Apr 03 j 02:49	17°♊05'11	2°16'33
max. Earth dist.	844 Jan 17 j 03:49	1°♊15'27	10.87741 AU	max. Earth dist.	850 Apr 03 j 02:33	17°♊05'06	10.21700 AU
morning rise	844 Feb 03 j 04:30	3°♊17'20		morning rise	850 Apr 20 j 18:05	19°♊20'01	
retrograde	844 May 16 j 20:29	10°♊38'19		retrograde	850 Aug 05 j 23:11	27°♊34'32	
opposition	844 Jul 26 j 16:31	7°♊16'27	-1°-8'-4	opposition	850 Oct 13 j 08:58	24°♊05'24	-2°-47'-18
min. Earth dist.	844 Jul 26 j 20:06	7°♊15'47	8.83095 AU	min. Earth dist.	850 Oct 13 j 08:11	24°♊05'33	8.17040 AU
direct	844 Oct 03 j 22:26	3°♊57'38		direct	850 Dec 18 j 20:57	20°♊40'27	
evening set	845 Jan 11 j 12:56	11°♊06'29		evening set	851 Mar 30 j 23:00	28°♊37'10	
					851 Apr 10 j 17:46	0°♊	
conjunction	845 Jan 28 j 07:48	13°♊07'44	-1°-8'-5	conjunction	851 Apr 17 j 14:24	0°♊53'13	-2°-10'-27
minimum elong	845 Jan 28 j 07:46	13°♊07'44	1°08'06	minimum elong	851 Apr 17 j 14:26	0°♊53'14	2°10'28
max. Earth dist.	845 Jan 28 j 03:02	13°♊06'18	10.78131 AU	max. Earth dist.	851 Apr 17 j 15:07	0°♊53'27	10.12564 AU
	845 Feb 12 j 20:12	15°♊		morning rise	851 May 05 j 09:55	3°♊10'36	
morning rise	845 Feb 14 j 06:07	15°♊10'05		retrograde	851 Aug 20 j 12:36	11°♊30'19	
retrograde	845 May 29 j 18:50	22°♊39'42		opposition	851 Oct 27 j 10:37	8°♊00'37	-2°-35'-6
opposition	845 Aug 08 j 09:01	19°♊16'32	-1°-38'-52	min. Earth dist.	851 Oct 27 j 09:04	8°♊00'56	8.08932 AU
min. Earth dist.	845 Aug 08 j 12:23	19°♊15'54	8.72868 AU	direct	852 Jan 01 j 18:55	4°♊34'23	
direct	845 Oct 16 j 01:49	15°♊57'07		evening set	852 Apr 13 j 14:38	12°♊38'34	
evening set	846 Jan 23 j 18:17	23°♊12'03					
conjunction	846 Feb 09 j 15:10	25°♊15'16	-1°-31'-36	conjunction	852 May 01 j 10:40	14°♊56'59	-1°-56'-35
minimum elong	846 Feb 09 j 15:08	25°♊15'15	1°31'37	minimum elong	852 May 01 j 10:43	14°♊57'00	1°56'36
max. Earth dist.	846 Feb 09 j 10:28	25°♊13'50	10.67345 AU		852 May 01 j 19:55	15°♊	
morning rise	846 Feb 26 j 16:16	27°♊19'46		max. Earth dist.	852 May 01 j 12:44	14°♊57'40	10.05645 AU
	846 Mar 21 j 23:16	0°♊		morning rise	852 May 19 j 10:09	17°♊16'30	
retrograde	846 Jun 11 j 23:42	4°♊58'46		retrograde	852 Sep 03 j 04:15	25°♊38'45	
opposition	846 Aug 21 j 06:59	1°♊34'16	-2°-5'-58	opposition	852 Nov 09 j 15:27	22°♊08'49	-2°-13'-21
min. Earth dist.	846 Aug 21 j 10:13	1°♊33'39	8.61683 AU	min. Earth dist.	852 Nov 09 j 13:07	22°♊09'18	8.03278 AU
	846 Sep 11 j 12:58	30°♊		direct	853 Jan 14 j 23:19	18°♊41'24	
direct	846 Oct 28 j 10:24	28°♊14'00		evening set	853 Apr 28 j 13:24	26°♊51'25	
	846 Dec 12 j 19:38	0°♊					
evening set	847 Feb 05 j 08:34	5°♊36'14		conjunction	853 May 16 j 13:37	29°♊11'41	-1°-35'-31
				minimum elong	853 May 16 j 13:41	29°♊11'43	1°35'32
conjunction	847 Feb 22 j 08:03	7°♊41'40	-1°-51'-24	max. Earth dist.	853 May 16 j 17:19	29°♊12'54	10.01407 AU
minimum elong	847 Feb 22 j 08:01	7°♊41'40	1°51'25		853 May 22 j 17:34	0°♊	
max. Earth dist.	847 Feb 22 j 04:14	7°♊40'29	10.55809 AU	morning rise	853 Jun 03 j 16:13	1°♊32'42	
morning rise	847 Mar 11 j 12:08	9°♊48'32		retrograde	853 Sep 17 j 19:54	9°♊54'30	
retrograde	847 Jun 25 j 11:17	17°♊37'15		opposition	853 Nov 23 j 21:42	6°♊24'43	-1°-43'-10
opposition	847 Sep 03 j 10:39	14°♊11'23	-2°-27'-50	min. Earth dist.	853 Nov 23 j 18:15	6°♊25'26	8.00458 AU
min. Earth dist.	847 Sep 03 j 13:16	14°♊10'52	8.49987 AU	direct	854 Jan 29 j 08:33	2°♊56'18	
direct	847 Nov 10 j 03:19	10°♊50'07		evening set	854 May 13 j 16:36	11°♊10'11	
evening set	848 Feb 18 j 08:36	18°♊20'31					
conjunction	848 Mar 06 j 11:20	20°♊28'27	-2°-6'-14	conjunction	854 May 31 j 19:57	13°♊31'31	-1°-8'-27
minimum elong	848 Mar 06 j 11:18	20°♊28'26	2°06'15	minimum elong	854 May 31 j 20:01	13°♊31'32	1°08'29
max. Earth dist.	848 Mar 06 j 09:09	20°♊27'45	10.43997 AU	max. Earth dist.	854 Jun 01 j 01:14	13°♊33'14	10.00127 AU
morning rise	848 Mar 23 j 18:42	22°♊37'51		morning rise	854 Jun 19 j 00:20	15°♊53'09	
	848 Jun 11 j 17:16	0°♊		retrograde	854 Oct 02 j 09:31	24°♊11'44	
retrograde	848 Jul 08 j 08:03	0°♊36'09		opposition	854 Dec 08 j 03:59	20°♊42'28	-1°-6'-30
	848 Aug 04 j 03:39	30°♊		min. Earth dist.	854 Dec 07 j 23:20	20°♊43'26	8.00655 AU
opposition	848 Sep 15 j 20:23	27°♊08'58	-2°-42'-53	direct	855 Feb 12 j 21:44	17°♊13'16	
min. Earth dist.	848 Sep 15 j 21:41	27°♊08'43	8.38260 AU	evening set	855 May 28 j 21:12	25°♊28'46	
direct	848 Nov 22 j 02:06	23°♊46'34					
	849 Feb 19 j 01:37	0°♊		conjunction	855 Jun 16 j 02:10	27°♊50'13	0°-37'-13
evening set	849 Mar 02 j 18:56	1°♊25'43		minimum elong	855 Jun 16 j 02:12	27°♊50'13	0°37'14
				max. Earth dist.	855 Jun 16 j 08:47	27°♊52'22	10.01875 AU
conjunction	849 Mar 20 j 01:29	3°♊36'19	-2°-14'-56		855 Jul 02 j 18:37	0°♊	
minimum elong	849 Mar 20 j 01:29	3°♊36'19	2°14'57	morning rise	855 Jul 04 j 06:42	0°♊11'32	
max. Earth dist.	849 Mar 20 j 00:25	3°♊35'59	10.32417 AU	retrograde	855 Oct 16 j 18:12	8°♊24'29	
morning rise	849 Apr 06 j 12:39	5°♊48'27		opposition	855 Dec 22 j 08:31	4°♊56'02	0°-25'-54
retrograde	849 Jul 22 j 13:08	13°♊55'36		min. Earth dist.	855 Dec 22 j 02:57	4°♊57'11	8.03842 AU
				direct	856 Feb 27 j 11:41	1°♊26'22	



evening set	856 Jun 12 j 00:33	9°  41'13		morning rise	861 Sep 24 j 18:40	20°  59'46	
				retrograde	862 Jan 02 j 16:46	28°  20'56	
conjunction	856 Jun 30 j 05:21	12°  01'49	0°-3'-58	opposition	862 Mar 11 j 11:02	25°  00'29	2°40'26
minimum elong	856 Jun 30 j 05:21	12°  01'49	0°04'00	min. Earth dist.	862 Mar 11 j 08:10	25°  01'02	8.63499 AU
behind sun begin	856 Jun 29 j 22:05	11°  59'29		direct	862 May 20 j 17:30	21°  34'32	
behind sun end	856 Jun 30 j 12:36	12°  04'09		evening set	862 Sep 03 j 06:20	29°  12'45	
max. Earth dist.	856 Jun 30 j 12:41	12°  04'10	10.06507 AU		862 Sep 09 j 19:43	0° 	
morning rise	856 Jul 18 j 08:17	14°  21'51					
asc. node	856 Aug 13 j 13:33	17°  31'37		conjunction	862 Sep 20 j 10:08	1°  17'16	2°14'25
retrograde	856 Oct 29 j 20:57	22°  27'17		minimum elong	862 Sep 20 j 10:07	1°  17'15	2°14'26
opposition	857 Jan 04 j 09:43	18°  59'57	0°15'46	max. Earth dist.	862 Sep 20 j 12:36	1°  18'01	10.69193 AU
min. Earth dist.	857 Jan 04 j 04:05	19°  01'06	8.09782 AU	morning rise	862 Oct 07 j 09:07	3°  20'21	
direct	857 Mar 13 j 00:09	15°  30'07		retrograde	863 Jan 14 j 23:19	10°  34'18	
evening set	857 Jun 26 j 23:38	23°  42'13		opposition	863 Mar 24 j 04:13	7°  15'03	2°48'07
				min. Earth dist.	863 Mar 24 j 02:49	7°  15'19	8.74923 AU
conjunction	857 Jul 15 j 02:24	26°  01'04	0°29'13	direct	863 Jun 02 j 19:36	3°  50'26	
minimum elong	857 Jul 15 j 02:23	26°  01'04	0°29'13	evening set	863 Sep 15 j 20:13	11°  20'41	
max. Earth dist.	857 Jul 15 j 09:32	26°  03'21	10.13690 AU				
morning rise	857 Aug 02 j 02:11	28°  18'59		conjunction	863 Oct 02 j 19:49	13°  22'40	2°17'49
	857 Aug 15 j 18:30	0° 		minimum elong	863 Oct 02 j 19:49	13°  22'40	2°17'50
retrograde	857 Nov 12 j 16:55	6°  15'43		max. Earth dist.	863 Oct 02 j 20:39	13°  22'55	10.80126 AU
opposition	858 Jan 18 j 06:43	2°  49'40	0°55'47	morning rise	863 Oct 19 j 15:03	15°  23'24	
min. Earth dist.	858 Jan 18 j 01:42	2°  50'42	8.18075 AU	retrograde	864 Jan 27 j 00:53	22°  31'15	
	858 Feb 27 j 21:40	30°  R 		opposition	864 Apr 04 j 16:44	19°  13'00	2°48'15
direct	858 Mar 27 j 09:28	29°  20'01		min. Earth dist.	864 Apr 04 j 17:01	19°  12'57	8.85294 AU
	858 Apr 23 j 21:52	0° 		direct	864 Jun 14 j 15:28	15°  49'44	
evening set	858 Jul 11 j 15:39	7°  27'29		evening set	864 Sep 27 j 01:09	23°  12'25	
conjunction	858 Jul 29 j 14:51	9°  43'53	1°00'06	conjunction	864 Oct 13 j 21:12	25°  12'19	2°15'13
minimum elong	858 Jul 29 j 14:48	9°  43'52	1°00'05	minimum elong	864 Oct 13 j 21:13	25°  12'19	2°15'13
max. Earth dist.	858 Jul 29 j 21:00	9°  45'51	10.22954 AU	max. Earth dist.	864 Oct 13 j 19:59	25°  11'57	10.89797 AU
morning rise	858 Aug 16 j 10:15	11°  59'04		morning rise	864 Oct 30 j 13:37	27°  11'08	
	858 Sep 10 j 20:30	15° 			864 Nov 24 j 22:51	0° 	
retrograde	858 Nov 26 j 04:58	19°  46'33		retrograde	865 Feb 06 j 21:47	4°  M 	
opposition	859 Jan 31 j 22:30	16°  21'55	1°31'46	opposition	865 Apr 17 j 01:10	0°  M 	2°41'21
min. Earth dist.	859 Jan 31 j 18:10	16°  22'47	8.28199 AU	min. Earth dist.	865 Apr 17 j 02:14	0°  M 	8.94189 AU
	859 Feb 18 j 07:58	15°  R 			865 Apr 29 j 19:41	30°  R 	
direct	859 Apr 10 j 15:00	12°  52'46		direct	865 Jun 27 j 04:52	27°  34'40	
	859 May 31 j 03:25	15° 			865 Aug 22 j 10:06	0° 	
evening set	859 Jul 25 j 22:53	20°  54'08		evening set	865 Oct 08 j 22:17	4°  M 	
conjunction	859 Aug 12 j 17:30	23°  07'38	1°27'04	conjunction	865 Oct 25 j 15:47	6°  M 	2°07'03
minimum elong	859 Aug 12 j 17:27	23°  07'37	1°27'03	minimum elong	865 Oct 25 j 15:48	6°  M 	2°07'03
max. Earth dist.	859 Aug 12 j 22:20	23°  09'09	10.33744 AU	max. Earth dist.	865 Oct 25 j 13:45	6°  M 	10.97832 AU
morning rise	859 Aug 30 j 07:49	25°  01'45		morning rise	865 Nov 11 j 06:10	8°  M 	
	859 Oct 11 j 09:30	0° 			866 Jan 19 j 12:25	15°  M 	
retrograde	859 Dec 09 j 06:59	2°  M 		retrograde	866 Feb 18 j 16:54	15°  M 	
	860 Feb 09 j 01:12	30°  R 			866 Mar 21 j 11:36	15°  R 	
opposition	860 Feb 14 j 08:23	29°  23'43	2°01'54	opposition	866 Apr 29 j 06:20	12°  M 	2°28'02
min. Earth dist.	860 Feb 14 j 04:38	29°  23'52	8.39560 AU	min. Earth dist.	866 Apr 29 j 07:49	12°  M 	9.01269 AU
direct	860 Apr 23 j 15:40	26°  06'24		direct	866 Jul 09 j 13:44	9°  M 	
	860 Jul 03 j 06:21	0° 			866 Oct 09 j 02:45	15°  M 	
evening set	860 Aug 07 j 20:02	4°  M 		evening set	866 Oct 20 j 12:59	16°  M 	
conjunction	860 Aug 25 j 09:38	6°  M 	1°48'53	conjunction	866 Nov 06 j 04:47	18°  M 	1°53'55
minimum elong	860 Aug 25 j 09:34	6°  M 	1°48'52	minimum elong	866 Nov 06 j 04:49	18°  M 	1°53'54
max. Earth dist.	860 Aug 25 j 13:14	6°  M 	10.45452 AU	max. Earth dist.	866 Nov 06 j 02:23	18°  M 	11.03914 AU
morning rise	860 Sep 11 j 18:35	8°  M 		morning rise	866 Nov 22 j 17:57	20°  M 	
retrograde	860 Dec 21 j 02:42	15°  M 		retrograde	867 Mar 02 j 11:14	27°  M 	
opposition	861 Feb 26 j 12:31	12°  M 	2°24'59	opposition	867 May 11 j 09:08	23°  M 	2°09'05
min. Earth dist.	861 Feb 26 j 08:56	12°  M 	8.51528 AU	min. Earth dist.	867 May 11 j 11:36	23°  M 	9.06249 AU
direct	861 May 07 j 08:48	9°  M 		direct	867 Jul 21 j 15:42	20°  M 	
evening set	861 Aug 21 j 06:27	16°  M 		evening set	867 Oct 31 j 23:16	27°  M 	
conjunction	861 Sep 07 j 15:00	18°  M 	2°04'47	conjunction	867 Nov 17 j 13:52	29°  M 	1°36'25
minimum elong	861 Sep 07 j 14:57	18°  M	2°04'47	minimum elong	867 Nov 17 j 13:54	29°  M	1°36'24
max. Earth dist.	861 Sep 07 j 18:10	18°  M	10.57460 AU	max. Earth dist.	867 Nov 17 j 10:03	29°  M	11.07787 AU



	867 Nov 21 j 08:22	0°♄	conjunction	874 Jan 23 j 06:14	7°♄58'37	0°-56'-27
morning rise	867 Dec 04 j 02:41	1°♄29'19	minimum elong	874 Jan 23 j 06:12	7°♄58'36	0°56'28
retrograde	868 Mar 13 j 03:12	8°♄26'09	max. Earth dist.	874 Jan 22 j 23:31	7°♄56'35	10.81857 AU
opposition	868 May 22 j 10:31	5°♄09'15 1°45'19	morning rise	874 Feb 09 j 03:32	10°♄00'09	
min. Earth dist.	868 May 22 j 14:47	5°♄08'28 9.08915 AU		874 Mar 29 j 09:11	15°♄	
direct	868 Aug 01 j 14:08	1°♄50'16	retrograde	874 May 24 j 05:34	17°♄26'06	
evening set	868 Nov 11 j 06:36	8°♄51'46		874 Jul 21 j 07:45	15°♄	
			opposition	874 Aug 02 j 23:23	14°♄03'18	-1°-25'-12
conjunction	868 Nov 27 j 20:34	10°♄47'52 1°15'17	min. Earth dist.	874 Aug 03 j 04:38	14°♄02'19	8.76589 AU
minimum elong	868 Nov 27 j 20:36	10°♄47'53 1°15'18	direct	874 Oct 10 j 23:31	10°♄43'49	
max. Earth dist.	868 Nov 27 j 14:47	10°♄46'10 11.09269 AU		874 Dec 23 j 13:19	15°♄	
morning rise	868 Dec 14 j 09:48	12°♄43'46	evening set	875 Jan 18 j 13:52	17°♄56'19	
retrograde	869 Mar 24 j 21:42	19°♄41'38				
opposition	869 Jun 03 j 11:37	16°♄24'24 1°17'37	conjunction	875 Feb 04 j 09:58	19°♄58'46	-1°-21'-16
min. Earth dist.	869 Jun 03 j 16:55	16°♄23'25 9.09119 AU	minimum elong	875 Feb 04 j 09:55	19°♄58'45	1°21'17
direct	869 Aug 13 j 11:55	13°♄05'58	max. Earth dist.	875 Feb 04 j 04:39	19°♄57'09	10.71053 AU
evening set	869 Nov 22 j 12:33	20°♄05'26	morning rise	875 Feb 21 j 09:41	22°♄02'23	
			retrograde	875 Jun 06 j 08:10	29°♄37'33	
conjunction	869 Dec 09 j 02:37	22°♄01'43 0°51'17	opposition	875 Aug 15 j 18:55	26°♄13'13	-1°-54'-14
minimum elong	869 Dec 09 j 02:39	22°♄01'43 0°51'17	min. Earth dist.	875 Aug 15 j 22:45	26°♄12'28	8.65308 AU
max. Earth dist.	869 Dec 08 j 20:15	21°♄59'50 11.08254 AU	direct	875 Oct 23 j 05:31	22°♄52'52	
morning rise	869 Dec 25 j 16:43	23°♄58'01		876 Jan 29 j 07:26	0°♄	
	870 Mar 01 j 20:46	0°♄	evening set	876 Jan 30 j 23:59	0°♄12'13	
retrograde	870 Apr 05 j 18:04	0°♄58'35				
	870 May 11 j 10:40	30°♄	conjunction	876 Feb 16 j 22:22	2°♄16'49	-1°-42'-57
opposition	870 Jun 15 j 13:22	27°♄40'41 0°46'52	minimum elong	876 Feb 16 j 22:19	2°♄16'48	1°42'57
min. Earth dist.	870 Jun 15 j 18:43	27°♄39'42 9.06831 AU	max. Earth dist.	876 Feb 16 j 17:54	2°♄15'26	10.59351 AU
direct	870 Aug 25 j 06:49	24°♄22'36	morning rise	876 Mar 05 j 00:56	4°♄22'45	
	870 Nov 21 j 18:28	0°♄	retrograde	876 Jun 18 j 17:25	12°♄07'43	
evening set	870 Dec 03 j 19:18	1°♄21'38	opposition	876 Aug 27 j 20:18	8°♄41'51	-2°-18'-44
			min. Earth dist.	876 Aug 27 j 23:04	8°♄41'19	8.53384 AU
conjunction	870 Dec 20 j 09:57	3°♄18'28 0°25'11	direct	876 Nov 03 j 18:12	5°♄20'28	
minimum elong	870 Dec 20 j 09:58	3°♄18'28 0°25'11	evening set	877 Feb 11 j 19:43	12°♄47'46	
max. Earth dist.	870 Dec 20 j 03:40	3°♄16'37 11.04790 AU				
morning rise	871 Jan 06 j 01:14	5°♄15'33	conjunction	877 Feb 28 j 20:54	14°♄54'46	-2°00'-13
retrograde	871 Apr 17 j 19:28	12°♄20'23	minimum elong	877 Feb 28 j 20:52	14°♄54'46	2°00'14
opposition	871 Jun 27 j 16:43	9°♄01'35 0°14'05	max. Earth dist.	877 Feb 28 j 16:55	14°♄53'32	10.47271 AU
min. Earth dist.	871 Jun 27 j 22:07	9°♄00'36 9.02181 AU	morning rise	877 Mar 18 j 02:50	17°♄03'15	
direct	871 Sep 06 j 02:06	5°♄43'33	retrograde	877 Jul 02 j 11:03	24°♄58'04	
desc. node	871 Dec 02 j 15:47	11°♄18'20	opposition	877 Sep 10 j 03:40	21°♄30'47	-2°-37'-6
evening set	871 Dec 15 j 04:29	12°♄43'41	min. Earth dist.	877 Sep 10 j 05:51	21°♄30'21	8.41362 AU
			direct	877 Nov 16 j 13:34	18°♄08'13	
conjunction	871 Dec 31 j 19:52	14°♄41'26 0°-2'-11	evening set	878 Feb 25 j 01:41	25°♄44'12	
minimum elong	871 Dec 31 j 19:52	14°♄41'26 0°02'12				
behind sun begin	871 Dec 31 j 12:54	14°♄39'24	conjunction	878 Mar 14 j 06:23	27°♄53'49	-2°-11'-52
behind sun end	872 Jan 01 j 02:51	14°♄43'29	minimum elong	878 Mar 14 j 06:21	27°♄53'49	2°11'52
max. Earth dist.	871 Dec 31 j 12:48	14°♄39'22 10.99059 AU	max. Earth dist.	878 Mar 14 j 03:35	27°♄52'56	10.35381 AU
morning rise	872 Jan 17 j 12:51	16°♄39'42		878 Mar 30 j 23:55	0°♄	
retrograde	872 Apr 29 j 01:41	23°♄50'14	morning rise	878 Mar 31 j 16:01	0°♄04'59	
opposition	872 Jul 08 j 23:06	20°♄30'19 0°-19'-40	retrograde	878 Jul 16 j 11:57	8°♄09'05	
min. Earth dist.	872 Jul 09 j 05:01	20°♄29'13 8.95392 AU	opposition	878 Sep 23 j 17:07	4°♄40'35	-2°-47'-52
direct	872 Sep 16 j 21:02	17°♄12'02	min. Earth dist.	878 Sep 23 j 18:27	4°♄40'19	8.29825 AU
evening set	872 Dec 25 j 17:29	24°♄14'48	direct	878 Nov 29 j 16:35	1°♄16'47	
			evening set	879 Mar 10 j 18:05	9°♄01'43	
conjunction	873 Jan 11 j 09:59	26°♄13'47 0°-29'-41				
minimum elong	873 Jan 11 j 09:57	26°♄13'47 0°29'43	conjunction	879 Mar 28 j 02:54	11°♄14'04	-2°-16'-47
max. Earth dist.	873 Jan 11 j 02:24	26°♄11'31 10.91314 AU	minimum elong	879 Mar 28 j 02:54	11°♄14'04	2°16'48
morning rise	873 Jan 28 j 05:03	28°♄13'33	max. Earth dist.	879 Mar 28 j 02:12	11°♄13'51	10.24287 AU
	873 Feb 12 j 18:56	0°♄	morning rise	879 Apr 14 j 16:28	13°♄27'57	
retrograde	873 May 11 j 11:13	5°♄31'11	retrograde	879 Jul 30 j 18:44	21°♄40'09	
opposition	873 Jul 21 j 09:09	2°♄09'54 0°-53'-12	opposition	879 Oct 07 j 12:13	18°♄10'39	-2°-49'-44
min. Earth dist.	873 Jul 21 j 15:14	2°♄08'46 8.86750 AU	min. Earth dist.	879 Oct 07 j 11:57	18°♄10'43	8.19387 AU
	873 Aug 21 j 20:52	30°♄	direct	879 Dec 13 j 04:27	14°♄45'38	
direct	873 Sep 28 j 20:16	28°♄51'08	evening set	880 Mar 23 j 20:50	22°♄39'16	
	873 Nov 04 j 20:52	0°♄				
evening set	874 Jan 06 j 12:08	5°♄58'03	conjunction	880 Apr 10 j 10:16	24°♄54'21	-2°-14'-12
			minimum elong	880 Apr 10 j 10:18	24°♄54'22	2°14'14



max. Earth dist.	880 Apr 10 j 11:53	24° $\Upsilon$ 54'52	10.14622 AU	asc. node	886 Jan 22 j 17:03	11° $\Theta$ 09'49	
morning rise	880 Apr 28 j 03:57	27° $\Upsilon$ 10'50		direct	886 Mar 06 j 23:03	9° $\Theta$ 33'03	
	880 May 21 j 10:05	0° $\Upsilon$		evening set	886 Jun 20 j 18:52	17° $\Theta$ 46'52	
retrograde	880 Aug 13 j 06:56	5° $\Upsilon$ 29'14					
opposition	880 Oct 20 j 12:12	1° $\Upsilon$ 59'05	-2°-41'-55	conjunction	886 Jul 08 j 22:36	20° $\Theta$ 06'34	0°14'44
min. Earth dist.	880 Oct 20 j 10:09	1° $\Upsilon$ 59'30	8.10666 AU	minimum elong	886 Jul 08 j 22:35	20° $\Theta$ 06'34	0°14'43
	880 Nov 15 j 09:57	30° $\Upsilon$		behind sun begin	886 Jul 08 j 19:53	20° $\Theta$ 05'42	
direct	880 Dec 25 j 22:48	28° $\Upsilon$ 32'54		behind sun end	886 Jul 09 j 01:18	20° $\Theta$ 07'26	
	881 Feb 03 j 18:06	0° $\Upsilon$		max. Earth dist.	886 Jul 09 j 05:53	20° $\Theta$ 08'55	10.10752 AU
evening set	881 Apr 07 j 09:03	6° $\Upsilon$ 34'25		morning rise	886 Jul 27 j 00:06	22° $\Theta$ 25'31	
					886 Oct 16 j 07:58	0° $\Omega$	
conjunction	881 Apr 25 j 03:14	8° $\Upsilon$ 52'01	-2°-3'-47	retrograde	886 Nov 07 j 01:04	0° $\Omega$ 26'25	
minimum elong	881 Apr 25 j 03:17	8° $\Upsilon$ 52'02	2°03'49		886 Nov 28 j 21:28	30° $\Upsilon$ $\Theta$	
max. Earth dist.	881 Apr 25 j 06:57	8° $\Upsilon$ 53'14	10.06980 AU	opposition	887 Jan 12 j 14:05	27° $\Theta$ 00'14	0°38'27
morning rise	881 May 13 j 00:57	11° $\Upsilon$ 10'49		min. Earth dist.	887 Jan 12 j 07:55	27° $\Theta$ 01'30	8.14865 AU
	881 Jun 14 j 00:55	15° $\Upsilon$		direct	887 Mar 21 j 10:51	23° $\Theta$ 31'00	
retrograde	881 Aug 27 j 23:23	19° $\Upsilon$ 32'54			887 Jun 21 j 21:43	0° $\Omega$	
opposition	881 Nov 03 j 16:02	16° $\Upsilon$ 02'31	-2°-24'-19	evening set	887 Jul 05 j 14:37	1° $\Omega$ 40'45	
min. Earth dist.	881 Nov 03 j 12:22	16° $\Upsilon$ 03'16	8.04207 AU				
	881 Nov 16 j 12:22	15° $\Upsilon$		conjunction	887 Jul 23 j 15:34	3° $\Omega$ 58'16	0°46'50
direct	882 Jan 08 j 23:28	12° $\Upsilon$ 35'15		minimum elong	887 Jul 23 j 15:32	3° $\Omega$ 58'15	0°46'49
	882 Mar 01 j 23:04	15° $\Upsilon$		max. Earth dist.	887 Jul 23 j 22:50	4° $\Omega$ 00'35	10.19514 AU
evening set	882 Apr 22 j 05:15	20° $\Upsilon$ 43'20		morning rise	887 Aug 10 j 13:07	6° $\Omega$ 14'41	
				retrograde	887 Nov 20 j 17:07	14° $\Omega$ 06'20	
conjunction	882 May 10 j 03:48	23° $\Upsilon$ 03'01	-1°-45'-48	opposition	888 Jan 26 j 08:28	10° $\Omega$ 41'33	1°16'28
minimum elong	882 May 10 j 03:51	23° $\Upsilon$ 03'02	1°45'50	min. Earth dist.	888 Jan 26 j 02:37	10° $\Omega$ 42'44	8.24524 AU
max. Earth dist.	882 May 10 j 08:59	23° $\Upsilon$ 04'42	10.01856 AU	direct	888 Apr 03 j 18:32	7° $\Omega$ 12'44	
morning rise	882 May 28 j 05:00	25° $\Upsilon$ 23'35			888 Jul 16 j 19:48	15° $\Omega$	
	882 Jul 06 j 11:52	0° $\Pi$		evening set	888 Jul 19 j 02:22	15° $\Omega$ 16'51	
retrograde	882 Sep 11 j 16:54	3° $\Pi$ 46'30					
opposition	882 Nov 17 j 22:14	0° $\Pi$ 16'18	-1°-57'-39	conjunction	888 Aug 05 j 23:15	17° $\Omega$ 31'36	1°15'42
min. Earth dist.	882 Nov 17 j 17:37	0° $\Pi$ 17'15	8.00453 AU	minimum elong	888 Aug 05 j 23:12	17° $\Omega$ 31'35	1°15'42
	882 Nov 21 j 05:01	30° $\Upsilon$		max. Earth dist.	888 Aug 06 j 05:36	17° $\Omega$ 33'37	10.29870 AU
direct	883 Jan 23 j 06:13	26° $\Upsilon$ 48'08		morning rise	888 Aug 23 j 15:48	19° $\Omega$ 45'02	
	883 Mar 24 j 20:50	0° $\Pi$		retrograde	888 Dec 03 j 00:17	27° $\Omega$ 27'15	
evening set	883 May 07 j 07:08	5° $\Pi$ 00'59		opposition	889 Feb 07 j 21:09	24° $\Omega$ 03'57	1°49'20
				min. Earth dist.	889 Feb 07 j 16:35	24° $\Omega$ 04'52	8.35444 AU
conjunction	883 May 25 j 09:13	7° $\Pi$ 22'03	-1°-21'-11	direct	889 Apr 17 j 21:12	20° $\Omega$ 35'48	
minimum elong	883 May 25 j 09:17	7° $\Pi$ 22'04	1°21'13	evening set	889 Aug 02 j 04:29	28° $\Omega$ 33'13	
max. Earth dist.	883 May 25 j 15:26	7° $\Pi$ 24'05	9.99619 AU		889 Aug 13 j 20:39	0° $\Upsilon$	
morning rise	883 Jun 12 j 12:55	9° $\Pi$ 43'39					
retrograde	883 Sep 26 j 08:58	18° $\Pi$ 04'31		conjunction	889 Aug 19 j 20:27	0° $\Upsilon$ 44'57	1°39'54
opposition	883 Dec 02 j 05:13	14° $\Pi$ 34'54	-1°-23'-31	minimum elong	889 Aug 19 j 20:24	0° $\Upsilon$ 44'56	1°39'53
min. Earth dist.	883 Dec 02 j 00:06	14° $\Pi$ 35'58	7.99691 AU	max. Earth dist.	889 Aug 20 j 01:07	0° $\Upsilon$ 46'25	10.41131 AU
direct	884 Feb 06 j 18:11	11° $\Pi$ 06'03		morning rise	889 Sep 06 j 07:37	2° $\Upsilon$ 55'14	
evening set	884 May 21 j 11:59	19° $\Pi$ 21'31		retrograde	889 Dec 16 j 00:21	10° $\Upsilon$ 28'29	
				opposition	890 Feb 21 j 04:16	7° $\Upsilon$ 06'37	2°15'38
conjunction	884 Jun 08 j 16:21	21° $\Pi$ 43'06	0°-51'-31	min. Earth dist.	890 Feb 21 j 01:29	7° $\Upsilon$ 07'10	8.46979 AU
minimum elong	884 Jun 08 j 16:23	21° $\Pi$ 43'06	0°51'32	direct	890 May 01 j 16:49	3° $\Upsilon$ 39'23	
max. Earth dist.	884 Jun 08 j 23:15	21° $\Pi$ 45'21	10.00434 AU	evening set	890 Aug 15 j 20:03	11° $\Upsilon$ 29'24	
morning rise	884 Jun 26 j 21:06	24° $\Pi$ 04'47					
	884 Aug 19 j 05:25	0° $\Theta$		conjunction	890 Sep 02 j 06:47	13° $\Upsilon$ 38'05	1°58'28
retrograde	884 Oct 09 j 20:12	2° $\Theta$ 20'56		minimum elong	890 Sep 02 j 06:45	13° $\Upsilon$ 38'04	1°58'27
	884 Dec 01 j 13:49	30° $\Upsilon$ $\Pi$		max. Earth dist.	890 Sep 02 j 09:19	13° $\Upsilon$ 38'52	10.52733 AU
opposition	884 Dec 15 j 11:15	28° $\Pi$ 52'16	0°-44'-15	morning rise	890 Sep 19 j 12:44	15° $\Upsilon$ 45'17	
min. Earth dist.	884 Dec 15 j 05:50	28° $\Pi$ 53'23	8.01981 AU	retrograde	890 Dec 28 j 16:43	23° $\Upsilon$ 10'13	
direct	885 Feb 20 j 08:51	25° $\Pi$ 23'00		opposition	891 Mar 06 j 05:42	19° $\Upsilon$ 49'39	2°34'29
	885 May 06 j 06:36	0° $\Theta$		min. Earth dist.	891 Mar 06 j 04:19	19° $\Upsilon$ 49'55	8.58612 AU
evening set	885 Jun 05 j 17:01	3° $\Theta$ 38'46		direct	891 May 15 j 05:55	16° $\Upsilon$ 23'30	
				evening set	891 Aug 29 j 01:10	24° $\Upsilon$ 05'41	
conjunction	885 Jun 23 j 21:57	5° $\Theta$ 59'54	0°-18'-49				
minimum elong	885 Jun 23 j 21:58	5° $\Theta$ 59'54	0°18'50	conjunction	891 Sep 15 j 06:56	26° $\Upsilon$ 11'28	2°10'52
max. Earth dist.	885 Jun 24 j 05:08	6° $\Theta$ 02'13	10.04234 AU	minimum elong	891 Sep 15 j 06:54	26° $\Upsilon$ 11'27	2°10'52
morning rise	885 Jul 12 j 01:57	8° $\Theta$ 20'40		max. Earth dist.	891 Sep 15 j 07:26	26° $\Upsilon$ 11'37	10.64194 AU
retrograde	885 Oct 24 j 01:39	16° $\Theta$ 29'57		morning rise	891 Oct 02 j 08:05	28° $\Upsilon$ 15'50	
opposition	885 Dec 29 j 14:38	13° $\Theta$ 02'27	0°-2'-38		891 Oct 17 j 04:55	0° $\Omega$	
min. Earth dist.	885 Dec 29 j 08:55	13° $\Theta$ 03'38	8.07161 AU	retrograde	892 Jan 10 j 01:09	5° $\Omega$ 33'15	



opposition	892 Mar 18 j 01:32	2°♄13'47	2°45'35	opposition	898 May 29 j 18:03	11°♄53'31	1°29'51
min. Earth dist.	892 Mar 18 j 00:54	2°♄13'55	8.69851 AU	min. Earth dist.	898 May 29 j 21:53	11°♄52'48	9.07037 AU
	892 Apr 18 j 17:12	30°♄17		direct	898 Aug 08 j 21:12	8°♄34'14	
direct	892 May 27 j 13:15	28°♄48'46		evening set	898 Nov 18 j 03:36	15°♄35'06	
	892 Jul 04 j 21:12	0°♄					
evening set	892 Sep 09 j 20:01	6°♄23'03		conjunction	898 Dec 04 j 17:48	17°♄31'30	1°01'46
				minimum elong	898 Dec 04 j 17:50	17°♄31'30	1°01'47
conjunction	892 Sep 26 j 21:24	8°♄26'13	2°16'59	max. Earth dist.	898 Dec 04 j 12:43	17°♄30'00	11.06776 AU
minimum elong	892 Sep 26 j 21:24	8°♄26'12	2°17'00	morning rise	898 Dec 21 j 07:30	19°♄27'48	
max. Earth dist.	892 Sep 26 j 20:58	8°♄26'04	10.75033 AU	retrograde	899 Apr 01 j 02:38	26°♄27'35	
morning rise	892 Oct 13 j 18:21	10°♄28'03		opposition	899 Jun 10 j 19:39	23°♄09'24	1°00'14
retrograde	893 Jan 21 j 06:17	17°♄39'00		min. Earth dist.	899 Jun 11 j 00:24	23°♄08'31	9.06038 AU
opposition	893 Mar 30 j 16:35	14°♄20'24	2°49'00	direct	899 Aug 20 j 15:23	19°♄50'35	
min. Earth dist.	893 Mar 30 j 16:31	14°♄20'25	8.80222 AU	evening set	899 Nov 29 j 10:06	26°♄50'14	
direct	893 Jun 09 j 13:08	10°♄56'34					
evening set	893 Sep 22 j 05:11	18°♄23'05		conjunction	899 Dec 16 j 00:26	28°♄46'57	0°36'26
				minimum elong	899 Dec 16 j 00:27	28°♄46'57	0°36'26
conjunction	893 Oct 09 j 02:55	20°♄24'02	2°16'57	max. Earth dist.	899 Dec 15 j 18:13	28°♄45'07	11.04690 AU
minimum elong	893 Oct 09 j 02:55	20°♄24'02	2°16'58		899 Dec 26 j 08:36	0°♄	
max. Earth dist.	893 Oct 09 j 02:03	20°♄23'46	10.84800 AU	morning rise	900 Jan 01 j 15:19	0°♄43'51	
morning rise	893 Oct 25 j 20:27	22°♄23'46		retrograde	900 Apr 12 j 00:52	7°♄47'05	
retrograde	894 Feb 02 j 06:25	29°♄29'23		opposition	900 Jun 21 j 22:32	4°♄28'12	0°28'09
opposition	894 Apr 12 j 03:19	26°♄11'26	2°45'06	min. Earth dist.	900 Jun 22 j 03:50	4°♄27'13	9.02820 AU
min. Earth dist.	894 Apr 12 j 04:25	26°♄11'13	8.89307 AU	direct	900 Aug 31 j 11:37	1°♄09'39	
direct	894 Jun 22 j 04:46	22°♄48'43		evening set	900 Dec 09 j 18:05	8°♄09'35	
	894 Oct 03 j 02:26	0°♄					
evening set	894 Oct 04 j 06:05	0°♄08'03		conjunction	900 Dec 26 j 09:07	10°♄07'01	0°09'32
				minimum elong	900 Dec 26 j 09:07	10°♄07'01	0°09'32
conjunction	894 Oct 21 j 00:50	2°♄07'11	2°11'09	behind sun begin	900 Dec 26 j 03:17	10°♄05'19	
minimum elong	894 Oct 21 j 00:51	2°♄07'11	2°11'09	behind sun end	900 Dec 26 j 14:56	10°♄08'43	
max. Earth dist.	894 Oct 20 j 22:44	2°♄06'33	10.93110 AU	max. Earth dist.	900 Dec 26 j 03:11	10°♄05'17	11.00425 AU
morning rise	894 Nov 06 j 16:00	4°♄05'19		morning rise	901 Jan 12 j 01:28	12°♄04'52	
retrograde	895 Feb 14 j 01:43	11°♄06'49		retrograde	901 Apr 24 j 04:46	19°♄13'05	
opposition	895 Apr 24 j 10:14	7°♄49'18	2°34'29	desc. node	901 May 05 j 08:42	19°♄07'02	
min. Earth dist.	895 Apr 24 j 13:00	7°♄48'47	8.96766 AU	opposition	901 Jul 04 j 03:39	15°♄53'16	0°-5'-21
direct	895 Jul 04 j 15:23	4°♄27'36		min. Earth dist.	901 Jul 04 j 08:17	15°♄52'25	8.97496 AU
evening set	895 Oct 16 j 00:00	11°♄40'36		direct	901 Sep 12 j 07:32	12°♄34'48	
				evening set	901 Dec 21 j 05:13	19°♄36'32	
conjunction	895 Nov 01 j 16:29	13°♄38'22	2°00'05				
minimum elong	895 Nov 01 j 16:31	13°♄38'23	2°00'04	conjunction	902 Jan 06 j 21:23	21°♄35'02	0°-18'-5
max. Earth dist.	895 Nov 01 j 12:34	13°♄37'13	10.99660 AU	minimum elong	902 Jan 06 j 21:22	21°♄35'02	0°18'07
	895 Nov 13 j 04:59	15°♄		max. Earth dist.	902 Jan 06 j 16:21	21°♄33'32	10.94118 AU
morning rise	895 Nov 18 j 06:18	15°♄35'23		morning rise	902 Jan 23 j 15:28	23°♄34'11	
retrograde	896 Feb 25 j 19:31	22°♄34'11			902 Apr 04 j 19:00	0°♄	
opposition	896 May 05 j 14:24	19°♄16'50	2°17'51	retrograde	902 May 06 j 13:48	0°♄48'46	
min. Earth dist.	896 May 05 j 18:04	19°♄16'09	9.02321 AU		902 Jun 07 j 20:35	30°♄♄	
direct	896 Jul 15 j 21:34	15°♄56'03		opposition	902 Jul 16 j 11:58	27°♄27'54	0°-39'-8
evening set	896 Oct 26 j 12:19	23°♄03'45		min. Earth dist.	902 Jul 16 j 15:51	27°♄27'10	8.90245 AU
				direct	902 Sep 24 j 04:33	24°♄09'17	
conjunction	896 Nov 12 j 03:24	25°♄00'37	1°44'22		902 Dec 22 j 03:57	0°♄	
minimum elong	896 Nov 12 j 03:26	25°♄00'38	1°44'21	evening set	903 Jan 01 j 21:29	1°♄14'22	
max. Earth dist.	896 Nov 11 j 22:49	24°♄59'16	11.04213 AU				
morning rise	896 Nov 28 j 16:31	26°♄56'57		conjunction	903 Jan 18 j 14:54	3°♄14'14	0°-45'-17
	896 Dec 26 j 19:48	0°♄		minimum elong	903 Jan 18 j 14:52	3°♄14'14	0°45'19
retrograde	897 Mar 08 j 12:17	3°♄54'35		max. Earth dist.	903 Jan 18 j 09:57	3°♄12'45	10.85995 AU
opposition	897 May 17 j 16:42	0°♄37'08	1°56'02	morning rise	903 Feb 04 j 11:04	5°♄14'59	
min. Earth dist.	897 May 17 j 20:14	0°♄36'28	9.05782 AU	retrograde	903 May 19 j 05:56	12°♄37'12	
	897 May 26 j 03:06	30°♄♄		opposition	903 Jul 29 j 00:21	9°♄15'09	-1°-11'-55
direct	897 Jul 27 j 23:12	27°♄17'11		min. Earth dist.	903 Jul 29 j 04:01	9°♄14'27	8.81341 AU
	897 Sep 25 j 14:54	0°♄		direct	903 Oct 06 j 04:30	5°♄56'09	
evening set	897 Nov 06 j 20:57	4°♄20'47		evening set	904 Jan 13 j 20:10	13°♄06'03	
					904 Jan 29 j 14:10	15°♄	
conjunction	897 Nov 23 j 11:23	6°♄17'12	1°24'41				
minimum elong	897 Nov 23 j 11:26	6°♄17'13	1°24'41	conjunction	904 Jan 30 j 15:09	15°♄07'35	-1°-11'-3
max. Earth dist.	897 Nov 23 j 07:06	6°♄15'56	11.06613 AU	minimum elong	904 Jan 30 j 15:06	15°♄07'34	1°11'04
morning rise	897 Dec 10 j 00:25	8°♄13'17		max. Earth dist.	904 Jan 30 j 09:59	15°♄06'01	10.76383 AU
retrograde	898 Mar 20 j 07:31	15°♄11'15		morning rise	904 Feb 16 j 13:48	17°♄10'14	



retrograde	904 May 31 j 04:01	24° $\approx$ 41'08		min. Earth dist.	910 Oct 28 j 20:50	10° $\mathfrak{C}$ 12'26	8.08969 AU
opposition	904 Aug 09 j 17:49	21° $\approx$ 17'47	-1°-42'-20	direct	911 Jan 03 j 06:40	6° $\mathfrak{C}$ 45'53	
min. Earth dist.	904 Aug 09 j 21:26	21° $\approx$ 17'06	8.71148 AU	evening set	911 Apr 16 j 03:34	14° $\mathfrak{C}$ 50'08	
direct	904 Oct 17 j 08:33	17° $\approx$ 58'12			911 Apr 17 j 10:32	15° $\mathfrak{C}$	
evening set	905 Jan 25 j 02:30	25° $\approx$ 14'14					
				conjunction	911 May 04 j 00:00	17° $\mathfrak{C}$ 08'37	-1°-54'-20
conjunction	905 Feb 10 j 23:39	27° $\approx$ 17'44	-1°-34'-10	minimum elong	911 May 04 j 00:04	17° $\mathfrak{C}$ 08'38	1°54'21
minimum elong	905 Feb 10 j 23:36	27° $\approx$ 17'43	1°34'11	max. Earth dist.	911 May 04 j 02:41	17° $\mathfrak{C}$ 09'30	10.05848 AU
max. Earth dist.	905 Feb 10 j 19:35	27° $\approx$ 16'29	10.65669 AU	morning rise	911 May 21 j 23:44	19° $\mathfrak{C}$ 28'10	
morning rise	905 Feb 28 j 01:00	29° $\approx$ 22'32		retrograde	911 Sep 05 j 16:15	27° $\mathfrak{C}$ 49'56	
	905 Mar 05 j 06:38	0° $\mathfrak{H}$		opposition	911 Nov 12 j 02:54	24° $\mathfrak{C}$ 20'05	-2°-10'-2
retrograde	905 Jun 13 j 08:53	7° $\mathfrak{H}$ 02'49		min. Earth dist.	911 Nov 12 j 00:09	24° $\mathfrak{C}$ 20'39	8.03635 AU
opposition	905 Aug 22 j 16:38	3° $\mathfrak{H}$ 38'07	-2°-8'-51	direct	912 Jan 17 j 11:26	20° $\mathfrak{C}$ 52'41	
min. Earth dist.	905 Aug 22 j 19:25	3° $\mathfrak{H}$ 37'35	8.60080 AU	evening set	912 Apr 30 j 02:16	29° $\mathfrak{C}$ 02'33	
direct	905 Oct 29 j 20:07	0° $\mathfrak{H}$ 17'44			912 May 07 j 12:43	0° $\mathfrak{H}$	
evening set	906 Feb 06 j 17:55	7° $\mathfrak{H}$ 41'02					
				conjunction	912 May 18 j 02:50	1° $\mathfrak{H}$ 22'47	-1°-32'-32
conjunction	906 Feb 23 j 17:48	9° $\mathfrak{H}$ 46'46	-1°-53'-24	minimum elong	912 May 18 j 02:54	1° $\mathfrak{H}$ 22'49	1°32'34
minimum elong	906 Feb 23 j 17:45	9° $\mathfrak{H}$ 46'46	1°53'25	max. Earth dist.	912 May 18 j 07:30	1° $\mathfrak{H}$ 24'19	10.01919 AU
max. Earth dist.	906 Feb 23 j 15:21	9° $\mathfrak{H}$ 46'01	10.54292 AU	morning rise	912 Jun 05 j 05:32	3° $\mathfrak{H}$ 43'45	
morning rise	906 Mar 12 j 22:05	11° $\mathfrak{H}$ 53'55		retrograde	912 Sep 19 j 07:22	12° $\mathfrak{H}$ 04'49	
retrograde	906 Jun 26 j 23:25	19° $\mathfrak{H}$ 43'48		opposition	912 Nov 25 j 08:47	8° $\mathfrak{H}$ 35'09	-1°-39'-4
opposition	906 Sep 04 j 20:59	16° $\mathfrak{H}$ 17'46	-2°-29'-55	min. Earth dist.	912 Nov 25 j 04:37	8° $\mathfrak{H}$ 36'01	8.01109 AU
min. Earth dist.	906 Sep 04 j 22:27	16° $\mathfrak{H}$ 17'29	8.48597 AU	direct	913 Jan 30 j 20:59	5° $\mathfrak{H}$ 06'46	
direct	906 Nov 11 j 12:24	12° $\mathfrak{H}$ 56'24		evening set	913 May 15 j 05:14	13° $\mathfrak{H}$ 20'16	
evening set	907 Feb 19 j 19:09	20° $\mathfrak{H}$ 27'47					
				conjunction	913 Jun 02 j 08:49	15° $\mathfrak{H}$ 41'30	-1°-4'-58
conjunction	907 Mar 08 j 22:13	22° $\mathfrak{H}$ 35'59	-2°-7'-32	minimum elong	913 Jun 02 j 08:52	15° $\mathfrak{H}$ 41'31	1°05'00
minimum elong	907 Mar 08 j 22:11	22° $\mathfrak{H}$ 35'59	2°07'32	max. Earth dist.	913 Jun 02 j 14:55	15° $\mathfrak{H}$ 43'29	10.00915 AU
max. Earth dist.	907 Mar 08 j 21:05	22° $\mathfrak{H}$ 35'38	10.42744 AU	morning rise	913 Jun 20 j 13:09	18° $\mathfrak{H}$ 03'00	
morning rise	907 Mar 26 j 05:51	24° $\mathfrak{H}$ 45'40		retrograde	913 Oct 03 j 19:54	26° $\mathfrak{H}$ 20'37	
	907 May 13 j 10:10	0° $\mathfrak{Y}$		opposition	913 Dec 09 j 14:29	22° $\mathfrak{H}$ 51'30	-1°-1'-55
retrograde	907 Jul 10 j 21:23	2° $\mathfrak{Y}$ 44'52		min. Earth dist.	913 Dec 09 j 09:25	22° $\mathfrak{H}$ 52'33	8.01559 AU
	907 Sep 09 j 07:25	30° $\mathfrak{R}$ $\mathfrak{H}$		direct	914 Feb 14 j 09:08	19° $\mathfrak{H}$ 22'22	
opposition	907 Sep 18 j 07:21	29° $\mathfrak{H}$ 17'35	-2°-44'00	evening set	914 May 30 j 09:27	27° $\mathfrak{H}$ 37'18	
min. Earth dist.	907 Sep 18 j 07:34	29° $\mathfrak{H}$ 17'32	8.37189 AU				
direct	907 Nov 24 j 11:02	25° $\mathfrak{H}$ 55'05		conjunction	914 Jun 17 j 14:24	29° $\mathfrak{H}$ 58'34	0°-33'-27
	908 Feb 02 j 10:48	0° $\mathfrak{Y}$		minimum elong	914 Jun 17 j 14:26	29° $\mathfrak{H}$ 58'35	0°33'28
evening set	908 Mar 04 j 06:27	3° $\mathfrak{Y}$ 35'02			914 Jun 17 j 18:48	0° $\mathfrak{G}$	
				max. Earth dist.	914 Jun 17 j 21:20	0° $\mathfrak{G}$ 00'49	10.02888 AU
conjunction	908 Mar 21 j 13:15	5° $\mathfrak{Y}$ 45'51	-2°-15'-23	morning rise	914 Jul 05 j 18:44	2° $\mathfrak{G}$ 19'39	
minimum elong	908 Mar 21 j 13:14	5° $\mathfrak{Y}$ 45'51	2°15'24	retrograde	914 Oct 18 j 04:17	10° $\mathfrak{G}$ 31'31	
max. Earth dist.	908 Mar 21 j 12:34	5° $\mathfrak{Y}$ 45'38	10.31533 AU	opposition	914 Dec 23 j 18:23	7° $\mathfrak{G}$ 03'15	0°-21'-9
morning rise	908 Apr 08 j 00:45	7° $\mathfrak{Y}$ 58'11		min. Earth dist.	914 Dec 23 j 13:00	7° $\mathfrak{G}$ 04'22	8.04945 AU
retrograde	908 Jul 24 j 01:40	16° $\mathfrak{Y}$ 05'53		direct	915 Feb 28 j 21:39	3° $\mathfrak{G}$ 33'38	
opposition	908 Sep 30 j 23:29	12° $\mathfrak{Y}$ 37'31	-2°-49'-45	evening set	915 Jun 14 j 12:03	11° $\mathfrak{G}$ 47'47	
min. Earth dist.	908 Sep 30 j 23:11	12° $\mathfrak{Y}$ 37'34	8.26364 AU				
direct	908 Dec 06 j 17:55	9° $\mathfrak{Y}$ 13'47		conjunction	915 Jul 02 j 16:35	14° $\mathfrak{G}$ 08'08	0°00'-7
evening set	909 Mar 18 j 04:11	17° $\mathfrak{Y}$ 02'29		minimum elong	915 Jul 02 j 16:35	14° $\mathfrak{G}$ 08'08	0°00'09
				behind sun begin	915 Jul 02 j 09:20	14° $\mathfrak{G}$ 05'49	
conjunction	909 Apr 04 j 15:17	19° $\mathfrak{Y}$ 16'01	-2°-16'-5	behind sun end	915 Jul 02 j 23:51	14° $\mathfrak{G}$ 10'28	
minimum elong	909 Apr 04 j 15:18	19° $\mathfrak{Y}$ 16'01	2°16'05	max. Earth dist.	915 Jul 02 j 23:35	14° $\mathfrak{G}$ 10'22	10.07691 AU
max. Earth dist.	909 Apr 04 j 15:04	19° $\mathfrak{Y}$ 15'57	10.21209 AU	asc. node	915 Jul 04 j 03:48	14° $\mathfrak{G}$ 19'32	
morning rise	909 Apr 22 j 07:01	21° $\mathfrak{Y}$ 31'01		morning rise	915 Jul 20 j 19:16	16° $\mathfrak{G}$ 27'53	
retrograde	909 Aug 07 j 11:01	29° $\mathfrak{Y}$ 45'43		retrograde	915 Nov 01 j 06:40	24° $\mathfrak{G}$ 32'09	
opposition	909 Oct 14 j 20:42	26° $\mathfrak{Y}$ 16'34	-2°-46'-9	opposition	916 Jan 06 j 18:56	21° $\mathfrak{G}$ 05'00	0°20'23
min. Earth dist.	909 Oct 14 j 20:00	26° $\mathfrak{Y}$ 16'42	8.16734 AU	min. Earth dist.	916 Jan 06 j 13:59	21° $\mathfrak{G}$ 06'01	8.11031 AU
direct	909 Dec 20 j 08:41	22° $\mathfrak{Y}$ 51'33		direct	916 Mar 14 j 09:49	17° $\mathfrak{G}$ 35'14	
	910 Mar 26 j 00:46	0° $\mathfrak{C}$		evening set	916 Jun 28 j 10:09	25° $\mathfrak{G}$ 46'33	
evening set	910 Apr 01 j 11:42	0° $\mathfrak{C}$ 48'35					
				conjunction	916 Jul 16 j 12:32	28° $\mathfrak{G}$ 05'06	0°32'47
conjunction	910 Apr 19 j 03:28	3° $\mathfrak{C}$ 04'46	-2°-9'-3	minimum elong	916 Jul 16 j 12:31	28° $\mathfrak{G}$ 05'05	0°32'47
minimum elong	910 Apr 19 j 03:31	3° $\mathfrak{C}$ 04'46	2°09'05	max. Earth dist.	916 Jul 16 j 18:41	28° $\mathfrak{G}$ 07'04	10.14980 AU
max. Earth dist.	910 Apr 19 j 04:21	3° $\mathfrak{C}$ 05'03	10.12436 AU		916 Jul 31 j 12:02	0° $\mathfrak{Q}$	
morning rise	910 May 06 j 23:25	5° $\mathfrak{C}$ 22'15		morning rise	916 Aug 03 j 12:02	0° $\mathfrak{Q}$ 22'42	
retrograde	910 Aug 22 j 00:47	13° $\mathfrak{C}$ 41'48		retrograde	916 Nov 14 j 00:57	8° $\mathfrak{Q}$ 18'16	
opposition	910 Oct 28 j 22:19	10° $\mathfrak{C}$ 12'08	-2°-32'-48	opposition	917 Jan 19 j 15:08	4° $\mathfrak{Q}$ 52'25	0°59'59



min. Earth dist.	917 Jan 19 j 10:45	4°♌53'18	8.19395 AU	retrograde	923 Jan 28 j 04:21	24°♊23'24	
direct	917 Mar 28 j 19:42	1°♌22'50		opposition	923 Apr 06 j 21:49	21°♊05'09	2°47'38
evening set	917 Jul 13 j 01:15	9°♌29'29		min. Earth dist.	923 Apr 06 j 22:17	21°♊05'04	8.85659 AU
				direct	923 Jun 16 j 20:53	17°♊41'56	
conjunction	917 Jul 30 j 23:59	11°♌45'33	1°03'16	evening set	923 Sep 29 j 05:17	25°♊04'15	
minimum elong	917 Jul 30 j 23:56	11°♌45'32	1°03'15				
max. Earth dist.	917 Jul 31 j 05:05	11°♌47'10	10.24273 AU	conjunction	923 Oct 16 j 01:14	27°♊04'05	2°14'23
morning rise	917 Aug 17 j 19:02	14°♌00'25		minimum elong	923 Oct 16 j 01:15	27°♊04'06	2°14'23
	917 Aug 25 j 20:51	15°♌		max. Earth dist.	923 Oct 15 j 23:43	27°♊03'38	10.90025 AU
retrograde	917 Nov 27 j 10:25	21°♌46'48		morning rise	923 Nov 01 j 17:32	29°♊02'52	
opposition	918 Feb 02 j 06:04	18°♌22'20	1°35'20		923 Nov 09 j 23:32	0°♌	
min. Earth dist.	918 Feb 02 j 01:54	18°♌23'10	8.29508 AU	retrograde	924 Feb 09 j 01:55	6°♌05'50	
	918 Mar 31 j 18:00	15°♌		opposition	924 Apr 18 j 05:59	2°♌48'18	2°39'57
direct	918 Apr 12 j 01:24	14°♌53'16		min. Earth dist.	924 Apr 18 j 06:47	2°♌48'09	8.94271 AU
	918 Apr 23 j 07:20	15°♌			924 Jun 01 j 17:25	30°♌	
evening set	918 Jul 27 j 07:22	22°♌53'48		direct	924 Jun 28 j 10:54	29°♊26'22	
					924 Jul 24 j 20:25	0°♌	
conjunction	918 Aug 14 j 01:33	25°♌06'57	1°29'40	evening set	924 Oct 10 j 02:05	6°♌41'58	
minimum elong	918 Aug 14 j 01:30	25°♌06'56	1°29'40				
max. Earth dist.	918 Aug 14 j 05:56	25°♌08'20	10.35013 AU	conjunction	924 Oct 26 j 19:37	8°♌40'15	2°05'37
morning rise	918 Aug 31 j 15:25	27°♌18'45		minimum elong	924 Oct 26 j 19:38	8°♌40'15	2°05'36
	918 Sep 23 j 10:37	0°♎		max. Earth dist.	924 Oct 26 j 17:55	8°♌39'44	10.97776 AU
retrograde	918 Dec 10 j 13:14	4°♎56'00		morning rise	924 Nov 12 j 09:53	10°♌37'37	
opposition	919 Feb 15 j 15:18	1°♎32'55	2°04'42		924 Dec 24 j 13:26	15°♌	
min. Earth dist.	919 Feb 15 j 11:16	1°♎33'43	8.40783 AU	retrograde	925 Feb 19 j 22:42	17°♌37'17	
	919 Mar 07 j 19:43	30°♌			925 Apr 21 j 11:44	15°♌	
direct	919 Apr 25 j 23:43	28°♌04'42		opposition	925 Apr 30 j 11:19	14°♌20'13	2°25'56
	919 Jun 13 j 08:34	0°♎		min. Earth dist.	925 Apr 30 j 13:03	14°♌19'54	9.01068 AU
evening set	919 Aug 10 j 03:18	5°♎58'02		direct	925 Jul 10 j 17:38	10°♌59'30	
					925 Sep 22 j 13:36	15°♌	
conjunction	919 Aug 27 j 16:33	8°♎08'09	1°50'50	evening set	925 Oct 21 j 16:46	18°♌09'15	
minimum elong	919 Aug 27 j 16:30	8°♎08'08	1°50'49				
max. Earth dist.	919 Aug 27 j 20:25	8°♎09'21	10.46602 AU	conjunction	925 Nov 07 j 08:30	20°♌06'25	1°51'55
morning rise	919 Sep 14 j 00:59	10°♎16'47		minimum elong	925 Nov 07 j 08:32	20°♌06'25	1°51'54
retrograde	919 Dec 23 j 09:07	17°♎45'19		max. Earth dist.	925 Nov 07 j 05:44	20°♌05'36	11.03586 AU
opposition	920 Feb 28 j 18:48	14°♎23'37	2°26'56	morning rise	925 Nov 23 j 21:42	22°♌02'54	
min. Earth dist.	920 Feb 28 j 15:21	14°♎24'18	8.52599 AU	retrograde	926 Mar 03 j 15:07	29°♌00'39	
direct	920 May 08 j 15:07	10°♎56'28		opposition	926 May 12 j 14:27	25°♌43'48	2°06'22
evening set	920 Aug 22 j 12:49	18°♎42'03		min. Earth dist.	926 May 12 j 17:42	25°♌43'11	9.05797 AU
				direct	926 Jul 22 j 19:40	22°♌24'02	
conjunction	920 Sep 08 j 21:01	20°♎49'09	2°06'02	evening set	926 Nov 02 j 03:09	29°♌29'09	
minimum elong	920 Sep 08 j 20:58	20°♎49'08	2°06'02		926 Nov 06 j 13:48	0°♏	
max. Earth dist.	920 Sep 09 j 00:13	20°♎50'08	10.58430 AU				
morning rise	920 Sep 26 j 00:13	22°♎54'47		conjunction	926 Nov 18 j 17:42	1°♏25'37	1°33'57
	920 Dec 17 j 23:30	0°♏		minimum elong	926 Nov 18 j 17:45	1°♏25'38	1°33'57
retrograde	921 Jan 03 j 21:25	0°♏15'18		max. Earth dist.	926 Nov 18 j 13:03	1°♏24'15	11.07234 AU
	921 Jan 20 j 21:22	30°♏		morning rise	926 Dec 05 j 06:45	3°♏21'40	
opposition	921 Mar 12 j 16:46	26°♏54'56	2°41'31	retrograde	927 Mar 15 j 08:33	10°♏18'59	
min. Earth dist.	921 Mar 12 j 14:47	26°♏55'19	8.64368 AU	opposition	927 May 24 j 16:03	7°♏02'02	1°42'04
direct	921 May 21 j 23:52	23°♏29'01		min. Earth dist.	927 May 24 j 20:32	7°♏01'13	9.08264 AU
	921 Aug 26 j 00:45	0°♏		direct	927 Aug 03 j 20:07	3°♏43'02	
evening set	921 Sep 04 j 11:53	1°♏06'38		evening set	927 Nov 13 j 10:43	10°♏44'47	
conjunction	921 Sep 21 j 15:17	3°♏10'56	2°14'57	conjunction	927 Nov 30 j 00:49	12°♏41'01	1°12'25
minimum elong	921 Sep 21 j 15:16	3°♏10'55	2°14'58	minimum elong	927 Nov 30 j 00:52	12°♏41'01	1°12'26
max. Earth dist.	921 Sep 21 j 16:51	3°♏11'24	10.69939 AU	max. Earth dist.	927 Nov 29 j 19:19	12°♏39'23	11.08542 AU
morning rise	921 Oct 08 j 13:59	5°♏13'51		morning rise	927 Dec 16 j 14:12	14°♏37'03	
retrograde	922 Jan 16 j 04:11	12°♏27'21		retrograde	928 Mar 26 j 03:03	21°♏35'30	
opposition	922 Mar 25 j 09:39	9°♏08'09	2°48'20	opposition	928 Jun 04 j 17:29	18°♏18'09	1°13'56
min. Earth dist.	922 Mar 25 j 09:09	9°♏08'15	8.75553 AU	min. Earth dist.	928 Jun 04 j 22:10	18°♏17'18	9.08317 AU
direct	922 Jun 04 j 01:35	5°♏43'35		direct	928 Aug 14 j 16:44	14°♏59'44	
evening set	922 Sep 17 j 00:57	13°♏13'19		evening set	928 Nov 23 j 17:04	21°♏59'31	
conjunction	922 Oct 04 j 00:12	15°♏15'10	2°17'39	conjunction	928 Dec 10 j 07:19	23°♏55'56	0°48'07
minimum elong	922 Oct 04 j 00:11	15°♏15'10	2°17'40	minimum elong	928 Dec 10 j 07:21	23°♏55'56	0°48'07
max. Earth dist.	922 Oct 03 j 23:52	15°♏15'05	10.80622 AU	max. Earth dist.	928 Dec 10 j 01:43	23°♏54'17	11.07390 AU
morning rise	922 Oct 20 j 19:19	17°♏15'48		morning rise	928 Dec 26 j 21:27	25°♏52'23	



	929 Feb 04 j 14:02	0°♄		evening set	935 Feb 01 j 09:38	2°♄17'20	
retrograde	929 Apr 07 j 01:28	2°♄53'39					
	929 Jun 11 j 07:01	30°♄35'38		conjunction	935 Feb 18 j 08:08	4°♄22'09	-1°-45'-16
opposition	929 Jun 16 j 19:46	29°♄35'38	0°42'53	minimum elong	935 Feb 18 j 08:06	4°♄22'09	1°45'16
min. Earth dist.	929 Jun 17 j 00:41	29°♄34'44	9.05902 AU	max. Earth dist.	935 Feb 18 j 03:16	4°♄20'39	10.58119 AU
direct	929 Aug 26 j 12:45	26°♄17'32		morning rise	935 Mar 07 j 11:03	6°♄28'21	
	929 Nov 04 j 12:32	0°♄		retrograde	935 Jun 21 j 05:34	14°♄14'18	
evening set	929 Dec 05 j 00:24	3°♄16'59		opposition	935 Aug 30 j 06:59	10°♄48'20	-2°-21'-13
				min. Earth dist.	935 Aug 30 j 10:01	10°♄47'44	8.52201 AU
conjunction	929 Dec 21 j 15:06	5°♄13'58	0°21'50	direct	935 Nov 06 j 03:17	7°♄26'50	
minimum elong	929 Dec 21 j 15:07	5°♄13'58	0°21'50	evening set	936 Feb 14 j 06:21	14°♄55'01	
max. Earth dist.	929 Dec 21 j 08:40	5°♄12'05	11.03801 AU				
morning rise	930 Jan 07 j 06:35	7°♄11'15		conjunction	936 Mar 02 j 07:47	17°♄02'14	-2°-1'-52
retrograde	930 Apr 19 j 03:16	14°♄16'51		minimum elong	936 Mar 02 j 07:45	17°♄02'14	2°01'53
opposition	930 Jun 28 j 23:48	10°♄57'58	0°09'55	max. Earth dist.	936 Mar 02 j 03:56	17°♄01'02	10.46147 AU
min. Earth dist.	930 Jun 29 j 05:34	10°♄56'54	9.01133 AU	morning rise	936 Mar 19 j 14:02	19°♄10'58	
direct	930 Sep 07 j 07:02	7°♄39'53		retrograde	936 Jul 03 j 22:59	27°♄06'39	
desc. node	930 Oct 18 j 00:39	9°♄00'30		opposition	936 Sep 11 j 15:02	23°♄39'16	-2°-38'-42
evening set	930 Dec 16 j 10:13	14°♄40'34		min. Earth dist.	936 Sep 11 j 17:16	23°♄38'50	8.40319 AU
				direct	936 Nov 18 j 00:08	20°♄16'36	
conjunction	931 Jan 02 j 01:41	16°♄38'29	0°-5'-37	evening set	937 Feb 26 j 13:09	27°♄53'22	
minimum elong	931 Jan 02 j 01:40	16°♄38'29	0°05'38				
behind sun begin	931 Jan 01 j 18:57	16°♄36'31		conjunction	937 Mar 15 j 18:15	0°♄03'13	-2°-12'-43
behind sun end	931 Jan 02 j 08:23	16°♄40'27		minimum elong	937 Mar 15 j 18:14	0°♄03'13	2°12'43
max. Earth dist.	931 Jan 01 j 18:04	16°♄36'15	10.97958 AU		937 Mar 15 j 08:06	0°♄	
morning rise	931 Jan 18 j 18:58	18°♄36'58		max. Earth dist.	937 Mar 15 j 16:27	0°♄02'39	10.34424 AU
retrograde	931 May 01 j 07:59	25°♄48'24		morning rise	937 Apr 02 j 04:09	2°♄14'36	
opposition	931 Jul 11 j 06:46	22°♄28'22	0°-23'-51	retrograde	937 Jul 17 j 23:41	10°♄19'25	
min. Earth dist.	931 Jul 11 j 13:03	22°♄27'12	8.94241 AU	opposition	937 Sep 25 j 04:56	6°♄50'48	-2°-48'-23
direct	931 Sep 19 j 03:30	19°♄10'03		min. Earth dist.	937 Sep 25 j 05:41	6°♄50'39	8.28976 AU
evening set	931 Dec 28 j 00:01	26°♄13'30		direct	937 Dec 01 j 04:50	3°♄26'54	
				evening set	938 Mar 12 j 06:31	11°♄12'31	
conjunction	932 Jan 13 j 16:41	28°♄12'41	0°-33'-4				
minimum elong	932 Jan 13 j 16:40	28°♄12'41	0°33'06	conjunction	938 Mar 29 j 15:48	13°♄25'05	-2°-16'-44
max. Earth dist.	932 Jan 13 j 09:32	28°♄10'33	10.90115 AU	minimum elong	938 Mar 29 j 15:48	13°♄25'05	2°16'45
	932 Jan 28 j 16:50	0°♄		max. Earth dist.	938 Mar 29 j 16:09	13°♄25'12	10.23545 AU
morning rise	932 Jan 30 j 11:56	0°♄12'40		morning rise	938 Apr 16 j 05:36	15°♄39'09	
retrograde	932 May 12 j 20:41	7°♄31'20		retrograde	938 Aug 01 j 07:24	23°♄51'47	
opposition	932 Jul 22 j 17:28	4°♄09'55	0°-57'-16	opposition	938 Oct 09 j 00:12	20°♄22'13	-2°-49'-6
min. Earth dist.	932 Jul 22 j 23:07	4°♄08'52	8.85516 AU	min. Earth dist.	938 Oct 08 j 23:07	20°♄22'26	8.18772 AU
direct	932 Sep 30 j 04:22	0°♄51'06		direct	938 Dec 14 j 15:59	16°♄57'06	
evening set	933 Jan 07 j 19:34	7°♄58'46		evening set	939 Mar 26 j 09:57	24°♄51'15	
conjunction	933 Jan 24 j 13:54	9°♄59'34	0°-59'-37	conjunction	939 Apr 12 j 23:47	27°♄06'31	-2°-13'-13
minimum elong	933 Jan 24 j 13:52	9°♄59'33	0°59'39	minimum elong	939 Apr 12 j 23:49	27°♄06'31	2°13'14
max. Earth dist.	933 Jan 24 j 08:05	9°♄57'48	10.80591 AU	max. Earth dist.	939 Apr 13 j 01:57	27°♄07'13	10.14134 AU
morning rise	933 Feb 10 j 11:18	12°♄01'20		morning rise	939 Apr 30 j 17:45	29°♄23'09	
	933 Mar 09 j 01:20	15°♄			939 May 05 j 15:07	0°♄	
retrograde	933 May 25 j 16:07	19°♄28'21		retrograde	939 Aug 15 j 21:17	7°♄41'39	
opposition	933 Aug 04 j 08:33	16°♄05'26	-1°-28'-56	opposition	939 Oct 23 j 00:22	4°♄11'29	-2°-40'-7
min. Earth dist.	933 Aug 04 j 12:56	16°♄04'36	8.75316 AU	min. Earth dist.	939 Oct 22 j 21:46	4°♄12'00	8.10314 AU
	933 Aug 19 j 00:10	15°♄		direct	939 Dec 28 j 09:37	0°♄45'11	
direct	933 Oct 12 j 06:38	12°♄45'55		evening set	940 Apr 08 j 22:31	8°♄47'01	
	933 Dec 03 j 02:48	15°♄					
evening set	934 Jan 19 j 22:21	19°♄59'14		conjunction	940 Apr 26 j 17:01	11°♄04'45	-2°-1'-54
				minimum elong	940 Apr 26 j 17:04	11°♄04'46	2°01'55
conjunction	934 Feb 05 j 18:37	22°♄01'54	-1°-24'-6	max. Earth dist.	940 Apr 26 j 20:38	11°♄05'55	10.06771 AU
minimum elong	934 Feb 05 j 18:34	22°♄01'53	1°24'07	morning rise	940 May 14 j 15:05	13°♄23'40	
max. Earth dist.	934 Feb 05 j 13:24	22°♄00'18	10.69775 AU		940 May 27 j 11:49	15°♄	
morning rise	934 Feb 22 j 18:34	24°♄05'45		retrograde	940 Aug 29 j 13:19	21°♄45'32	
	934 Apr 22 j 17:38	0°♄		opposition	940 Nov 05 j 04:11	18°♄15'08	-2°-21'-25
retrograde	934 Jun 07 j 18:48	1°♄41'59		min. Earth dist.	940 Nov 05 j 00:36	18°♄15'53	8.04136 AU
	934 Jul 24 j 20:37	30°♄			940 Dec 26 j 19:39	15°♄	
opposition	934 Aug 17 j 04:55	28°♄17'32	-1°-57'-27	direct	941 Jan 10 j 11:40	14°♄47'46	
min. Earth dist.	934 Aug 17 j 08:28	28°♄16'50	8.64049 AU		941 Jan 25 j 04:00	15°♄	
direct	934 Oct 24 j 14:06	24°♄57'06		evening set	941 Apr 23 j 18:54	22°♄55'59	
	935 Jan 12 j 18:05	0°♄					



conjunction	941 May 11 j 17:43	25°♄15'43	-1°-43'-6	retrograde	946 Nov 22 j 01:25	16°♄10'41	
minimum elong	941 May 11 j 17:47	25°♄15'44	1°43'08		946 Dec 28 j 14:03	15°♄♄	
max. Earth dist.	941 May 11 j 22:17	25°♄17'12	10.01933 AU	opposition	947 Jan 27 j 17:29	12°♄46'04	1°20'26
morning rise	941 May 29 j 19:16	27°♄36'20		min. Earth dist.	947 Jan 27 j 11:50	12°♄47'13	8.25632 AU
	941 Jun 18 j 03:44	0°♄		direct	947 Apr 06 j 04:50	9°♄17'20	
retrograde	941 Sep 13 j 05:15	5°♄58'43			947 Jul 01 j 21:31	15°♄	
opposition	941 Nov 19 j 10:06	2°♄28'34	-1°-53'-51	evening set	947 Jul 21 j 12:22	17°♄20'43	
min. Earth dist.	941 Nov 19 j 06:00	2°♄29'25	8.00660 AU				
	941 Dec 22 j 18:54	30°♄♄		conjunction	947 Aug 08 j 08:46	19°♄35'10	1°18'39
direct	942 Jan 24 j 19:32	29°♄00'17		minimum elong	947 Aug 08 j 08:43	19°♄35'09	1°18'38
	942 Feb 26 j 14:37	0°♄		max. Earth dist.	947 Aug 08 j 15:11	19°♄37'12	10.31041 AU
evening set	942 May 08 j 20:42	7°♄13'04		morning rise	947 Aug 26 j 00:51	21°♄48'17	
				retrograde	947 Dec 05 j 08:23	29°♄29'34	
conjunction	942 May 26 j 22:59	9°♄34'07	-1°-17'-52	opposition	948 Feb 10 j 05:31	26°♄06'24	1°52'35
minimum elong	942 May 26 j 23:03	9°♄34'08	1°17'54	min. Earth dist.	948 Feb 10 j 01:27	26°♄07'13	8.36686 AU
max. Earth dist.	942 May 27 j 04:34	9°♄35'56	9.99963 AU	direct	948 Apr 19 j 05:53	22°♄38'20	
morning rise	942 Jun 14 j 02:55	11°♄55'40			948 Jul 29 j 18:35	0°♄	
retrograde	942 Sep 27 j 19:29	20°♄15'47		evening set	948 Aug 03 j 13:27	0°♄34'53	
opposition	942 Dec 03 j 16:41	16°♄46'14	-1°-19'-4				
min. Earth dist.	942 Dec 03 j 11:54	16°♄47'14	8.00150 AU	conjunction	948 Aug 21 j 04:51	2°♄46'18	1°42'13
direct	943 Feb 08 j 07:18	13°♄17'19		minimum elong	948 Aug 21 j 04:48	2°♄46'17	1°42'12
evening set	943 May 24 j 01:04	21°♄32'28		max. Earth dist.	948 Aug 21 j 08:52	2°♄47'33	10.42414 AU
				morning rise	948 Sep 07 j 15:38	4°♄56'15	
conjunction	943 Jun 11 j 05:31	23°♄53'58	0°-47'-47	retrograde	948 Dec 17 j 06:54	12°♄28'31	
minimum elong	943 Jun 11 j 05:34	23°♄53'59	0°47'49	opposition	949 Feb 22 j 11:51	9°♄06'46	2°18'01
max. Earth dist.	943 Jun 11 j 12:14	23°♄56'09	10.01011 AU	min. Earth dist.	949 Feb 22 j 09:26	9°♄07'14	8.48290 AU
morning rise	943 Jun 29 j 10:18	26°♄15'31		direct	949 May 03 j 01:37	5°♄39'36	
	943 Jul 30 j 14:51	0°♄		evening set	949 Aug 17 j 03:56	13°♄28'42	
retrograde	943 Oct 12 j 06:15	4°♄30'49					
opposition	943 Dec 17 j 22:09	1°♄02'12	0°-39'-28	conjunction	949 Sep 03 j 14:09	15°♄37'04	2°00'04
min. Earth dist.	943 Dec 17 j 16:33	1°♄03'22	8.02657 AU	minimum elong	949 Sep 03 j 14:06	15°♄37'03	2°00'04
	943 Dec 30 j 15:20	30°♄♄		max. Earth dist.	949 Sep 03 j 15:55	15°♄37'37	10.54022 AU
direct	944 Feb 22 j 20:34	27°♄32'54		morning rise	949 Sep 20 j 19:43	17°♄43'59	
	944 Apr 15 j 21:51	0°♄		retrograde	949 Dec 29 j 21:19	25°♄08'02	
evening set	944 Jun 07 j 05:26	5°♄48'12		opposition	950 Mar 07 j 12:34	21°♄47'33	2°35'59
				min. Earth dist.	950 Mar 07 j 10:59	21°♄47'52	8.59861 AU
conjunction	944 Jun 25 j 10:24	8°♄09'11	0°-14'-57	direct	950 May 16 j 15:12	18°♄21'30	
minimum elong	944 Jun 25 j 10:25	8°♄09'12	0°14'59	evening set	950 Aug 30 j 07:54	26°♄02'49	
behind sun begin	944 Jun 25 j 08:04	8°♄08'26					
behind sun end	944 Jun 25 j 12:46	8°♄09'57		conjunction	950 Sep 16 j 13:19	28°♄08'19	2°11'44
max. Earth dist.	944 Jun 25 j 17:53	8°♄11'36	10.05009 AU	minimum elong	950 Sep 16 j 13:17	28°♄08'19	2°11'44
morning rise	944 Jul 13 j 14:14	10°♄29'46		max. Earth dist.	950 Sep 16 j 13:50	28°♄08'29	10.65367 AU
retrograde	944 Oct 25 j 12:09	18°♄38'06			950 Oct 01 j 20:39	0°♄	
asc. node	944 Dec 11 j 16:23	16°♄42'54		morning rise	950 Oct 03 j 14:04	0°♄12'25	
opposition	944 Dec 31 j 00:49	15°♄10'42	0°02'08	retrograde	951 Jan 11 j 07:18	7°♄29'10	
min. Earth dist.	944 Dec 30 j 18:35	15°♄11'59	8.08013 AU	opposition	951 Mar 20 j 07:51	4°♄09'46	2°46'10
direct	945 Mar 08 j 10:13	11°♄41'19		min. Earth dist.	951 Mar 20 j 07:00	4°♄09'56	8.70934 AU
evening set	945 Jun 22 j 06:37	19°♄54'33		direct	951 May 29 j 20:47	0°♄44'53	
				evening set	951 Sep 12 j 01:48	8°♄18'22	
conjunction	945 Jul 10 j 10:15	22°♄14'04	0°18'29				
minimum elong	945 Jul 10 j 10:14	22°♄14'03	0°18'29	conjunction	951 Sep 29 j 02:59	10°♄21'20	2°17'07
max. Earth dist.	945 Jul 10 j 18:10	22°♄16'37	10.11677 AU	minimum elong	951 Sep 29 j 02:58	10°♄21'20	2°17'08
morning rise	945 Jul 28 j 11:22	24°♄32'46		max. Earth dist.	951 Sep 29 j 02:49	10°♄21'17	10.76003 AU
	945 Sep 15 j 14:25	0°♄		morning rise	951 Oct 15 j 23:34	12°♄22'59	
retrograde	945 Nov 08 j 10:44	2°♄32'42		retrograde	952 Jan 23 j 11:55	19°♄33'25	
	946 Jan 02 j 23:27	30°♄♄		opposition	952 Mar 31 j 22:30	16°♄14'54	2°48'42
opposition	946 Jan 13 j 23:38	29°♄06'38	0°42'57	min. Earth dist.	952 Mar 31 j 22:58	16°♄14'49	8.81067 AU
min. Earth dist.	946 Jan 13 j 17:11	29°♄07'58	8.15850 AU	direct	952 Jun 10 j 17:58	12°♄51'11	
direct	946 Mar 22 j 21:39	25°♄37'28		evening set	952 Sep 23 j 10:26	20°♄17'06	
	946 Jun 04 j 19:07	0°♄					
evening set	946 Jul 07 j 01:34	3°♄46'36		conjunction	952 Oct 10 j 07:55	22°♄17'54	2°16'23
				minimum elong	952 Oct 10 j 07:55	22°♄17'54	2°16'24
conjunction	946 Jul 25 j 02:12	6°♄03'50	0°50'16	max. Earth dist.	952 Oct 10 j 06:28	22°♄17'28	10.85504 AU
minimum elong	946 Jul 25 j 02:10	6°♄03'49	0°50'16	morning rise	952 Oct 27 j 01:15	24°♄17'31	
max. Earth dist.	946 Jul 25 j 10:02	6°♄06'20	10.20558 AU		952 Dec 24 j 20:53	0°♄	
morning rise	946 Aug 11 j 23:14	8°♄19'57		retrograde	953 Feb 03 j 10:43	1°♄22'49	
	946 Oct 17 j 00:15	15°♄			953 Mar 17 j 04:15	30°♄♄	



opposition	953 Apr 13 j 09:01	28° $\overline{04}$ '57	2°43'59	min. Earth dist.	959 Jun 24 j 11:00	6° $\overline{24}$ '14	9.01482 AU
min. Earth dist.	953 Apr 13 j 11:13	28° $\overline{04}$ '32	8.89870 AU	direct	959 Sep 02 j 18:08	3° $\overline{06}$ '33	
direct	953 Jun 23 j 10:47	24° $\overline{04}$ '19		evening set	959 Dec 12 j 00:09	10° $\overline{07}$ '09	
	953 Sep 17 j 12:35	0° $\overline{00}$ '					
evening set	953 Oct 05 j 10:54	2° $\overline{01}$ '15		conjunction	959 Dec 28 j 15:26	12° $\overline{04}$ '48	0°06'04
				minimum elong	959 Dec 28 j 15:26	12° $\overline{04}$ '49	0°06'04
conjunction	953 Oct 22 j 05:24	4° $\overline{00}$ '18	2°09'56	behind sun begin	959 Dec 28 j 08:47	12° $\overline{02}$ '52	
minimum elong	953 Oct 22 j 05:25	4° $\overline{00}$ '18	2°09'56	behind sun end	959 Dec 28 j 22:04	12° $\overline{06}$ '45	
max. Earth dist.	953 Oct 22 j 01:59	3° $\overline{05}$ '17	10.93520 AU	max. Earth dist.	959 Dec 28 j 10:01	12° $\overline{03}$ '14	10.98956 AU
morning rise	953 Nov 07 j 20:35	5° $\overline{05}$ '23		morning rise	960 Jan 14 j 07:54	14° $\overline{02}$ '54	
retrograde	954 Feb 15 j 06:44	12° $\overline{05}$ '48		desc. node	960 Mar 19 j 16:57	20° $\overline{07}$ '03	
opposition	954 Apr 25 j 15:56	9° $\overline{04}$ '19	2°32'37	retrograde	960 Apr 25 j 13:12	21° $\overline{12}$ '12	
min. Earth dist.	954 Apr 25 j 19:09	9° $\overline{04}$ '43	8.97019 AU	opposition	960 Jul 05 j 11:46	17° $\overline{52}$ '12	0°-9'-39
direct	954 Jul 05 j 21:33	6° $\overline{20}$ '42		min. Earth dist.	960 Jul 05 j 16:00	17° $\overline{51}$ '25	8.95908 AU
evening set	954 Oct 17 j 04:22	13° $\overline{33}$ '27		direct	960 Sep 13 j 14:13	14° $\overline{33}$ '38	
	954 Oct 29 j 11:28	15° $\overline{00}$ '		evening set	960 Dec 22 j 12:11	21° $\overline{36}$ '12	
conjunction	954 Nov 02 j 20:51	15° $\overline{31}$ '13	1°58'16	conjunction	961 Jan 08 j 04:27	23° $\overline{34}$ '57	0°-21'-35
minimum elong	954 Nov 02 j 20:53	15° $\overline{31}$ '13	1°58'15	minimum elong	961 Jan 08 j 04:26	23° $\overline{34}$ '57	0°21'37
max. Earth dist.	954 Nov 02 j 16:31	15° $\overline{29}$ '56	10.99752 AU	max. Earth dist.	961 Jan 07 j 23:08	23° $\overline{33}$ '22	10.92425 AU
morning rise	954 Nov 19 j 10:42	17° $\overline{28}$ '14		morning rise	961 Jan 24 j 22:45	25° $\overline{34}$ '22	
retrograde	955 Feb 27 j 00:16	24° $\overline{27}$ '11			961 Mar 08 j 04:53	0° $\approx$	
opposition	955 May 07 j 20:07	21° $\overline{09}$ '48	2°15'19	retrograde	961 May 08 j 00:35	2° $\approx$ 50'13	
min. Earth dist.	955 May 07 j 23:33	21° $\overline{09}$ '10	9.02240 AU		961 Jul 10 j 23:19	30° $\overline{00}$ '	
direct	955 Jul 18 j 03:17	17° $\overline{49}$ '06		opposition	961 Jul 17 j 21:01	29° $\overline{29}$ '08	0°-43'-23
evening set	955 Oct 28 j 16:40	24° $\overline{56}$ '43		min. Earth dist.	961 Jul 18 j 01:09	29° $\overline{28}$ '21	8.88463 AU
				direct	961 Sep 25 j 11:55	26° $\overline{10}$ '22	
conjunction	955 Nov 14 j 07:52	26° $\overline{53}$ '39	1°42'02		961 Dec 04 j 11:56	0° $\approx$	
minimum elong	955 Nov 14 j 07:55	26° $\overline{53}$ '40	1°42'01	evening set	962 Jan 03 j 05:30	3° $\approx$ 16'27	
max. Earth dist.	955 Nov 14 j 03:33	26° $\overline{52}$ '22	11.03965 AU				
morning rise	955 Nov 30 j 20:59	28° $\overline{50}$ '02		conjunction	962 Jan 19 j 23:00	5° $\approx$ 16'36	0°-48'-40
	955 Dec 11 j 03:33	0° $\overline{00}$ '		minimum elong	962 Jan 19 j 22:58	5° $\approx$ 16'36	0°48'41
retrograde	956 Mar 09 j 19:10	5° $\overline{48}$ '00		max. Earth dist.	962 Jan 19 j 17:21	5° $\approx$ 14'54	10.84142 AU
opposition	956 May 18 j 22:34	2° $\overline{30}$ '31	1°52'55	morning rise	962 Feb 05 j 19:32	7° $\approx$ 17'40	
min. Earth dist.	956 May 19 j 02:15	2° $\overline{29}$ '50	9.05357 AU	retrograde	962 May 20 j 15:50	14° $\approx$ 41'14	
	956 Jun 26 j 11:45	30° $\overline{00}$ '		opposition	962 Jul 30 j 10:17	11° $\approx$ 18'58	-1°-15'-57
direct	956 Jul 29 j 04:47	29° $\overline{10}$ '35		min. Earth dist.	962 Jul 30 j 14:30	11° $\approx$ 18'10	8.79431 AU
	956 Aug 30 j 07:31	0° $\overline{00}$ '		direct	962 Oct 07 j 12:12	7° $\approx$ 59'47	
evening set	956 Nov 08 j 01:30	6° $\overline{14}$ '18			963 Jan 13 j 16:42	15° $\approx$	
				evening set	963 Jan 15 j 05:15	15° $\approx$ 10'51	
conjunction	956 Nov 24 j 15:59	8° $\overline{10}$ '50	1°21'55				
minimum elong	956 Nov 24 j 16:01	8° $\overline{10}$ '51	1°21'55	conjunction	963 Feb 01 j 00:30	17° $\approx$ 12'42	-1°-14'-9
max. Earth dist.	956 Nov 24 j 11:12	8° $\overline{09}$ '25	11.06024 AU	minimum elong	963 Feb 01 j 00:27	17° $\approx$ 12'41	1°14'09
morning rise	956 Dec 11 j 05:08	10° $\overline{07}$ '03		max. Earth dist.	963 Jan 31 j 19:30	17° $\approx$ 11'11	10.74430 AU
retrograde	957 Mar 21 j 13:23	17° $\overline{05}$ '31		morning rise	963 Feb 17 j 23:26	19° $\approx$ 15'40	
opposition	957 May 31 j 00:29	13° $\overline{47}$ '43	1°26'16	retrograde	963 Jun 02 j 14:34	26° $\approx$ 48'02	
min. Earth dist.	957 May 31 j 05:10	13° $\overline{46}$ '51	9.06281 AU	opposition	963 Aug 12 j 04:37	23° $\approx$ 24'26	-1°-45'-56
direct	957 Aug 10 j 01:31	10° $\overline{28}$ '25		min. Earth dist.	963 Aug 12 j 08:09	23° $\approx$ 23'46	8.69174 AU
evening set	957 Nov 19 j 08:29	17° $\overline{29}$ '36		direct	963 Oct 19 j 19:14	20° $\approx$ 04'40	
				evening set	964 Jan 27 j 12:48	27° $\approx$ 21'57	
conjunction	957 Dec 05 j 22:41	19° $\overline{26}$ '07	0°58'39				
minimum elong	957 Dec 05 j 22:43	19° $\overline{26}$ '07	0°58'40	conjunction	964 Feb 13 j 10:18	29° $\approx$ 25'48	-1°-36'-49
max. Earth dist.	957 Dec 05 j 16:36	19° $\overline{24}$ '19	11.05869 AU	minimum elong	964 Feb 13 j 10:15	29° $\approx$ 25'47	1°36'50
morning rise	957 Dec 22 j 12:39	21° $\overline{22}$ '35		max. Earth dist.	964 Feb 13 j 07:10	29° $\approx$ 24'50	10.63684 AU
retrograde	958 Apr 02 j 09:04	28° $\overline{23}$ '08			964 Feb 18 j 01:28	0° $\overline{00}$ '	
opposition	958 Jun 12 j 02:37	25° $\overline{04}$ '48	0°56'17	morning rise	964 Mar 01 j 11:50	1° $\overline{30}$ '56	
min. Earth dist.	958 Jun 12 j 07:59	25° $\overline{03}$ '49	9.04979 AU	retrograde	964 Jun 14 j 22:50	9° $\overline{12}$ '44	
direct	958 Aug 21 j 22:15	21° $\overline{45}$ '55		opposition	964 Aug 24 j 04:26	5° $\overline{47}$ '47	-2°-11'-49
evening set	958 Nov 30 j 15:29	28° $\overline{46}$ '04		min. Earth dist.	964 Aug 24 j 06:24	5° $\overline{47}$ '24	8.58123 AU
	958 Dec 11 j 04:31	0° $\overline{00}$ '		direct	964 Oct 31 j 06:34	2° $\overline{27}$ '13	
				evening set	965 Feb 08 j 05:36	9° $\overline{51}$ '48	
conjunction	958 Dec 17 j 05:59	0° $\overline{42}$ '59	0°33'04				
minimum elong	958 Dec 17 j 06:00	0° $\overline{42}$ '59	0°33'05	conjunction	965 Feb 25 j 05:48	11° $\overline{57}$ '54	-1°-55'-27
max. Earth dist.	958 Dec 16 j 23:39	0° $\overline{41}$ '07	11.03491 AU	minimum elong	965 Feb 25 j 05:45	11° $\overline{57}$ '53	1°55'27
morning rise	959 Jan 02 j 21:05	2° $\overline{40}$ '05		max. Earth dist.	965 Feb 25 j 04:04	11° $\overline{57}$ '21	10.52374 AU
retrograde	959 Apr 14 j 08:43	9° $\overline{44}$ '14		morning rise	965 Mar 14 j 10:21	14° $\overline{05}$ '24	
opposition	959 Jun 24 j 05:55	6° $\overline{25}$ '10	0°23'57	retrograde	965 Jun 28 j 14:32	21° $\overline{56}$ '44	



opposition	965 Sep 06 j 09:52	18° <del>✕</del> 30'29	-2°-32'-2	conjunction	971 May 20 j 20:32	3° <del>Π</del> 44'14	-1°-29'-9
min. Earth dist.	965 Sep 06 j 10:32	18° <del>✕</del> 30'21	8.46764 AU	minimum elong	971 May 20 j 20:36	3° <del>Π</del> 44'16	1°29'11
direct	965 Nov 12 j 22:51	15° <del>✕</del> 08'57		max. Earth dist.	971 May 21 j 02:04	3° <del>Π</del> 46'03	10.02118 AU
evening set	966 Feb 21 j 08:17	22° <del>✕</del> 41'38		morning rise	971 Jun 07 j 23:19	6° <del>Π</del> 05'11	
				retrograde	971 Sep 21 j 23:03	14° <del>Π</del> 25'43	
conjunction	966 Mar 10 j 11:39	24° <del>✕</del> 50'11	-2°-8'-48	opposition	971 Nov 28 j 00:03	10° <del>Π</del> 56'09	-1°-34'-27
minimum elong	966 Mar 10 j 11:37	24° <del>✕</del> 50'10	2°08'48	min. Earth dist.	971 Nov 27 j 19:20	10° <del>Π</del> 57'07	8.01493 AU
max. Earth dist.	966 Mar 10 j 10:36	24° <del>✕</del> 49'51	10.41014 AU	direct	972 Feb 02 j 12:20	7° <del>Π</del> 27'46	
morning rise	966 Mar 27 j 19:44	27° <del>✕</del> 00'13		evening set	972 May 16 j 22:31	15° <del>Π</del> 41'07	
	966 Apr 22 j 08:46	0° <del>Υ</del>					
retrograde	966 Jul 12 j 12:24	5° <del>Υ</del> 00'41		conjunction	972 Jun 04 j 02:15	18° <del>Π</del> 02'18	-1°-1'-1
opposition	966 Sep 19 j 21:14	1° <del>Υ</del> 33'13	-2°-45'-4	minimum elong	972 Jun 04 j 02:18	18° <del>Π</del> 02'19	1°01'02
min. Earth dist.	966 Sep 19 j 21:09	1° <del>Υ</del> 33'14	8.35606 AU	max. Earth dist.	972 Jun 04 j 08:39	18° <del>Π</del> 04'24	10.01487 AU
	966 Oct 10 j 06:14	30° <del>℞</del>		morning rise	972 Jun 22 j 06:36	20° <del>Π</del> 23'43	
direct	966 Nov 25 j 23:52	28° <del>✕</del> 10'34		retrograde	972 Oct 05 j 11:44	28° <del>Π</del> 40'30	
	967 Jan 10 j 09:04	0° <del>Υ</del>		opposition	972 Dec 11 j 05:27	25° <del>Π</del> 11'31	0°-56'-45
evening set	967 Mar 06 j 20:57	5° <del>Υ</del> 51'42		min. Earth dist.	972 Dec 11 j 00:25	25° <del>Π</del> 12'34	8.02301 AU
				direct	973 Feb 15 j 23:51	21° <del>Π</del> 42'25	
conjunction	967 Mar 24 j 04:04	8° <del>Υ</del> 02'50	-2°-15'-45	evening set	973 Jun 01 j 02:33	29° <del>Π</del> 56'58	
minimum elong	967 Mar 24 j 04:04	8° <del>Υ</del> 02'50	2°15'46		973 Jun 01 j 12:03	0° <del>☾</del>	
max. Earth dist.	967 Mar 24 j 03:31	8° <del>Υ</del> 02'40	10.30123 AU				
morning rise	967 Apr 10 j 16:05	10° <del>Υ</del> 15'30		conjunction	973 Jun 19 j 07:25	2° <del>☾</del> 18'05	0°-29'-12
retrograde	967 Jul 26 j 17:01	18° <del>Υ</del> 24'07		minimum elong	973 Jun 19 j 07:26	2° <del>☾</del> 18'06	0°29'13
opposition	967 Oct 03 j 14:10	14° <del>Υ</del> 55'38	-2°-49'-37	max. Earth dist.	973 Jun 19 j 13:58	2° <del>☾</del> 20'13	10.03799 AU
min. Earth dist.	967 Oct 03 j 13:49	14° <del>Υ</del> 55'42	8.25158 AU	morning rise	973 Jul 07 j 11:38	4° <del>☾</del> 38'59	
direct	967 Dec 09 j 08:01	11° <del>Υ</del> 31'44		retrograde	973 Oct 19 j 19:36	12° <del>☾</del> 49'45	
evening set	968 Mar 19 j 19:43	19° <del>Υ</del> 21'21		opposition	973 Dec 25 j 08:46	9° <del>☾</del> 21'41	0°-15'-48
				min. Earth dist.	973 Dec 25 j 03:52	9° <del>☾</del> 22'42	8.06004 AU
conjunction	968 Apr 06 j 07:15	21° <del>Υ</del> 35'09	-2°-15'-27	direct	974 Mar 02 j 13:21	5° <del>☾</del> 52'08	
minimum elong	968 Apr 06 j 07:17	21° <del>Υ</del> 35'10	2°15'28	asc. node	974 May 18 j 08:58	10° <del>☾</del> 38'54	
max. Earth dist.	968 Apr 06 j 07:44	21° <del>Υ</del> 35'19	10.20213 AU	evening set	974 Jun 16 j 04:31	14° <del>☾</del> 05'43	
morning rise	968 Apr 23 j 23:26	23° <del>Υ</del> 50'26					
	968 Jun 20 j 08:00	0° <del>♄</del>		conjunction	974 Jul 04 j 08:46	16° <del>☾</del> 25'48	0°04'12
retrograde	968 Aug 09 j 03:17	2° <del>♄</del> 05'39		minimum elong	974 Jul 04 j 08:46	16° <del>☾</del> 25'47	0°04'11
	968 Sep 28 j 19:33	30° <del>℞</del> <del>Υ</del>		behind sun begin	974 Jul 04 j 01:31	16° <del>☾</del> 23'28	
opposition	968 Oct 16 j 11:54	28° <del>Υ</del> 36'24	-2°-44'-45	behind sun end	974 Jul 04 j 16:00	16° <del>☾</del> 28'06	
min. Earth dist.	968 Oct 16 j 10:56	28° <del>Υ</del> 36'36	8.15949 AU	max. Earth dist.	974 Jul 04 j 15:01	16° <del>☾</del> 27'47	10.08887 AU
direct	968 Dec 21 j 23:19	25° <del>Υ</del> 11'16		morning rise	974 Jul 22 j 11:12	18° <del>☾</del> 45'16	
	969 Mar 08 j 00:21	0° <del>♄</del>		retrograde	974 Nov 02 j 19:37	26° <del>☾</del> 48'19	
evening set	969 Apr 03 j 04:01	3° <del>♄</del> 08'56		opposition	975 Jan 08 j 08:41	23° <del>☾</del> 21'24	0°25'33
				min. Earth dist.	975 Jan 08 j 04:02	23° <del>☾</del> 22'21	8.12347 AU
conjunction	969 Apr 20 j 20:21	5° <del>♄</del> 25'20	-2°-7'-25	direct	975 Mar 17 j 02:01	19° <del>☾</del> 51'44	
minimum elong	969 Apr 20 j 20:23	5° <del>♄</del> 25'21	2°07'26	evening set	975 Jul 01 j 01:31	28° <del>☾</del> 02'15	
max. Earth dist.	969 Apr 20 j 22:21	5° <del>♄</del> 25'59	10.11855 AU		975 Jul 16 j 11:42	0° <del>♄</del>	
morning rise	969 May 08 j 16:39	7° <del>♄</del> 43'01					
	969 Jul 20 j 06:54	15° <del>♄</del>		conjunction	975 Jul 19 j 03:31	0° <del>♄</del> 20'28	0°36'47
retrograde	969 Aug 23 j 16:58	16° <del>♄</del> 02'43		minimum elong	975 Jul 19 j 03:29	0° <del>♄</del> 20'27	0°36'47
	969 Sep 27 j 07:20	15° <del>℞</del> <del>♄</del>		max. Earth dist.	975 Jul 19 j 09:09	0° <del>♄</del> 22'16	10.16395 AU
opposition	969 Oct 30 j 13:44	12° <del>♄</del> 33'02	-2°-30'-9	morning rise	975 Aug 06 j 02:39	2° <del>♄</del> 37'43	
min. Earth dist.	969 Oct 30 j 11:34	12° <del>♄</del> 33'28	8.08588 AU	retrograde	975 Nov 16 j 12:07	10° <del>♄</del> 32'04	
direct	970 Jan 04 j 22:50	9° <del>♄</del> 06'41		opposition	976 Jan 22 j 04:00	7° <del>♄</del> 06'25	1°04'40
	970 Mar 31 j 03:49	15° <del>♄</del>		min. Earth dist.	976 Jan 21 j 23:25	7° <del>♄</del> 07'21	8.20890 AU
evening set	970 Apr 17 j 20:37	17° <del>♄</del> 11'20		direct	976 Mar 30 j 11:01	3° <del>♄</del> 36'58	
				evening set	976 Jul 14 j 15:29	11° <del>♄</del> 42'41	
conjunction	970 May 05 j 17:33	19° <del>♄</del> 29'59	-1°-51'-44				
minimum elong	970 May 05 j 17:37	19° <del>♄</del> 30'00	1°51'46	conjunction	976 Aug 01 j 13:49	13° <del>♄</del> 58'23	1°06'47
max. Earth dist.	970 May 05 j 21:26	19° <del>♄</del> 31'15	10.05661 AU	minimum elong	976 Aug 01 j 13:46	13° <del>♄</del> 58'22	1°06'46
morning rise	970 May 23 j 17:31	21° <del>♄</del> 49'38		max. Earth dist.	976 Aug 01 j 18:54	13° <del>♄</del> 59'59	10.25823 AU
	970 Aug 24 j 02:56	0° <del>Π</del>			976 Aug 09 j 16:07	15° <del>♄</del>	
retrograde	970 Sep 07 j 07:58	0° <del>Π</del> 11'10		morning rise	976 Aug 19 j 08:22	16° <del>♄</del> 12'51	
	970 Sep 21 j 14:22	30° <del>℞</del> <del>♄</del>		retrograde	976 Nov 28 j 21:48	23° <del>♄</del> 58'02	
opposition	970 Nov 13 j 18:17	26° <del>♄</del> 41'22	-2°-6'-17	opposition	977 Feb 03 j 17:58	20° <del>♄</del> 33'44	1°39'17
min. Earth dist.	970 Nov 13 j 14:38	26° <del>♄</del> 42'07	8.03640 AU	min. Earth dist.	977 Feb 03 j 13:25	20° <del>♄</del> 34'39	8.31091 AU
direct	971 Jan 19 j 03:35	23° <del>♄</del> 13'56		direct	977 Apr 13 j 14:23	17° <del>♄</del> 04'50	
	971 Apr 21 j 16:28	0° <del>Π</del>		evening set	977 Jul 28 j 20:20	25° <del>♄</del> 04'20	
evening set	971 May 02 j 19:37	1° <del>Π</del> 23'56					
				conjunction	977 Aug 15 j 14:07	27° <del>♄</del> 17'08	1°32'32



minimum elong	977 Aug 15 j 14:03	27°♏17'07	1°32'32	morning rise	983 Nov 14 j 16:13	12°♍35'50	
max. Earth dist.	977 Aug 15 j 18:53	27°♏18'38	10.36603 AU		983 Dec 06 j 06:58	15°♍	
morning rise	977 Sep 02 j 03:20	29°♏28'31		retrograde	984 Feb 22 j 04:27	19°♍35'20	
	977 Sep 06 j 10:28	0°♐		opposition	984 May 01 j 18:52	16°♍18'15	2°23'36
retrograde	977 Dec 12 j 00:19	7°♐04'36		min. Earth dist.	984 May 01 j 21:37	16°♍17'45	9.01278 AU
opposition	978 Feb 17 j 02:25	3°♐41'42	2°07'46		984 May 19 j 20:15	15°♍	
min. Earth dist.	978 Feb 16 j 22:23	3°♐42'30	8.42360 AU	direct	984 Jul 12 j 00:09	12°♍57'32	
direct	978 Apr 27 j 11:29	0°♐13'38			984 Sep 01 j 10:59	15°♍	
evening set	978 Aug 11 j 14:52	8°♐05'55		evening set	984 Oct 22 j 22:58	20°♍07'00	
conjunction	978 Aug 29 j 03:38	10°♐15'39	1°52'57	conjunction	984 Nov 08 j 14:33	22°♍04'07	1°49'44
minimum elong	978 Aug 29 j 03:35	10°♐15'38	1°52'57	minimum elong	984 Nov 08 j 14:36	22°♍04'08	1°49'43
max. Earth dist.	978 Aug 29 j 07:42	10°♐16'55	10.48142 AU	max. Earth dist.	984 Nov 08 j 10:39	22°♍02'58	11.03636 AU
morning rise	978 Sep 15 j 11:26	12°♐23'55		morning rise	984 Nov 25 j 03:53	24°♍00'37	
retrograde	978 Dec 24 j 18:17	19°♐51'24			985 Jan 29 j 10:34	0°♐	
opposition	979 Mar 02 j 05:08	16°♐29'52	2°29'02	retrograde	985 Mar 04 j 22:11	0°♐58'27	
min. Earth dist.	979 Mar 02 j 02:24	16°♐30'24	8.54093 AU		985 Apr 09 j 04:48	30°♍	
direct	979 May 11 j 02:40	13°♐02'50		opposition	985 May 13 j 22:00	27°♍41'33	2°03'22
evening set	979 Aug 24 j 23:06	20°♐47'23		min. Earth dist.	985 May 14 j 01:52	27°♍40'50	9.05686 AU
				direct	985 Jul 24 j 03:59	24°♍21'47	
conjunction	979 Sep 11 j 06:46	22°♐54'08	2°07'21		985 Oct 21 j 12:45	0°♐	
minimum elong	979 Sep 11 j 06:44	22°♐54'08	2°07'21	evening set	985 Nov 03 j 09:09	1°♐26'47	
max. Earth dist.	979 Sep 11 j 09:15	22°♐54'54	10.59847 AU				
morning rise	979 Sep 28 j 09:32	24°♐59'26		conjunction	985 Nov 19 j 23:43	3°♐23'18	1°31'16
	979 Nov 14 j 21:36	0°♑		minimum elong	985 Nov 19 j 23:46	3°♐23'18	1°31'16
retrograde	980 Jan 06 j 05:54	2°♑19'03		max. Earth dist.	985 Nov 19 j 18:46	3°♐21'50	11.06974 AU
	980 Feb 29 j 16:54	30°♍		morning rise	985 Dec 06 j 12:53	5°♐19'24	
opposition	980 Mar 14 j 02:13	28°♐58'47	2°42'37	retrograde	986 Mar 16 j 15:30	12°♐17'02	
min. Earth dist.	980 Mar 14 j 01:07	28°♐59'00	8.65707 AU	opposition	986 May 25 j 23:45	8°♐59'59	1°38'32
direct	980 May 23 j 10:16	25°♐32'59		min. Earth dist.	986 May 26 j 03:53	8°♐59'13	9.07857 AU
	980 Aug 08 j 17:03	0°♑		direct	986 Aug 05 j 03:09	5°♐41'00	
evening set	980 Sep 05 j 20:58	3°♑09'38		evening set	986 Nov 14 j 16:43	12°♐42'47	
conjunction	980 Sep 22 j 23:53	5°♑13'39	2°15'29	conjunction	986 Dec 01 j 07:01	14°♐39'06	1°09'20
minimum elong	980 Sep 22 j 23:52	5°♑13'39	2°15'29	minimum elong	986 Dec 01 j 07:03	14°♐39'07	1°09'20
max. Earth dist.	980 Sep 23 j 00:14	5°♑13'46	10.71167 AU	max. Earth dist.	986 Dec 01 j 02:07	14°♐37'40	11.08008 AU
morning rise	980 Oct 09 j 22:20	7°♑16'19		morning rise	986 Dec 17 j 20:28	16°♐35'16	
retrograde	981 Jan 17 j 10:49	14°♑29'04		retrograde	987 Mar 28 j 11:29	23°♐34'13	
opposition	981 Mar 26 j 18:21	11°♑09'55	2°48'28	opposition	987 Jun 07 j 01:28	20°♐16'45	1°09'58
min. Earth dist.	981 Mar 26 j 18:06	11°♑09'58	8.76667 AU	min. Earth dist.	987 Jun 07 j 05:49	20°♐15'57	9.07661 AU
direct	981 Jun 05 j 11:06	7°♑45'26		direct	987 Aug 17 j 00:25	16°♐58'18	
evening set	981 Sep 18 j 08:55	15°♑14'20		evening set	987 Nov 25 j 23:30	23°♐58'19	
conjunction	981 Oct 05 j 07:53	17°♑15'58	2°17'25	conjunction	987 Dec 12 j 13:50	25°♐54'51	0°44'43
minimum elong	981 Oct 05 j 07:52	17°♑15'58	2°17'25	minimum elong	987 Dec 12 j 13:51	25°♐54'51	0°44'44
max. Earth dist.	981 Oct 05 j 07:07	17°♑15'44	10.81603 AU	max. Earth dist.	987 Dec 12 j 08:07	25°♐53'10	11.06632 AU
morning rise	981 Oct 22 j 02:44	19°♑16'24		morning rise	987 Dec 29 j 04:08	27°♐51'27	
retrograde	982 Jan 29 j 11:29	26°♑23'29			988 Jan 17 j 11:08	0°♑	
opposition	982 Apr 08 j 05:59	23°♑05'14	2°46'52	retrograde	988 Apr 08 j 10:16	4°♑53'18	
min. Earth dist.	982 Apr 08 j 06:11	23°♑05'12	8.86498 AU	opposition	988 Jun 18 j 04:12	1°♑35'11	0°38'36
direct	982 Jun 18 j 06:59	19°♑42'06		min. Earth dist.	988 Jun 18 j 09:32	1°♑34'12	9.05044 AU
evening set	982 Sep 30 j 12:20	27°♑03'42			988 Jul 10 j 15:58	30°♍	
				direct	988 Aug 27 j 19:03	28°♐17'02	
conjunction	982 Oct 17 j 08:12	29°♑03'24	2°13'25		988 Oct 13 j 06:41	0°♑	
minimum elong	982 Oct 17 j 08:13	29°♑03'24	2°13'26	evening set	988 Dec 06 j 07:19	5°♑16'50	
max. Earth dist.	982 Oct 17 j 07:00	29°♑03'02	10.90717 AU				
	982 Oct 25 j 05:58	0°♒		conjunction	988 Dec 22 j 22:01	7°♑13'58	0°18'16
morning rise	982 Nov 03 j 00:15	1°♒02'01		minimum elong	988 Dec 22 j 22:02	7°♑13'58	0°18'16
retrograde	983 Feb 10 j 10:06	8°♒04'39		max. Earth dist.	988 Dec 22 j 14:50	7°♑11'51	11.02853 AU
opposition	983 Apr 20 j 13:45	4°♒47'07	2°38'21	morning rise	989 Jan 08 j 13:47	9°♑11'26	
min. Earth dist.	983 Apr 20 j 14:52	4°♒46'54	8.94805 AU	retrograde	989 Apr 20 j 11:00	16°♑17'49	
direct	983 Jun 30 j 18:14	1°♒25'15		opposition	989 Jun 30 j 08:54	12°♑58'48	0°05'29
evening set	983 Oct 12 j 08:35	8°♒40'18		min. Earth dist.	989 Jun 30 j 15:12	12°♑57'38	9.00090 AU
				desc. node	989 Aug 30 j 17:25	9°♑44'36	
conjunction	983 Oct 29 j 02:00	10°♒38'30	2°04'00	direct	989 Sep 08 j 14:54	9°♑40'39	
minimum elong	983 Oct 29 j 02:02	10°♒38'31	2°04'00	evening set	989 Dec 17 j 17:42	16°♑41'53	
max. Earth dist.	983 Oct 28 j 23:52	10°♒37'52	10.98151 AU				



conjunction	990 Jan 03 j 09:20	18°☾39'59	0°-9'-14		996 Feb 27 j 20:12	0°♄	
minimum elong	990 Jan 03 j 09:19	18°☾39'59	0°09'15	evening set	996 Feb 29 j 03:30	0°♄09'42	
behind sun begin	990 Jan 03 j 03:24	18°☾38'14					
behind sun end	990 Jan 03 j 15:14	18°☾41'43		conjunction	996 Mar 17 j 09:03	2°♄19'51	-2°-13'-30
max. Earth dist.	990 Jan 03 j 01:53	18°☾37'47	10.96824 AU	minimum elong	996 Mar 17 j 09:02	2°♄19'51	2°13'31
morning rise	990 Jan 20 j 02:50	20°☾38'40		max. Earth dist.	996 Mar 17 j 08:19	2°♄19'37	10.33138 AU
retrograde	990 May 02 j 18:28	27°☾51'05		morning rise	996 Apr 03 j 19:13	4°♄31'32	
opposition	990 Jul 12 j 16:29	24°☾30'55	0°-28'-17	retrograde	996 Jul 19 j 16:17	12°♄37'21	
min. Earth dist.	990 Jul 12 j 22:30	24°☾29'47	8.93018 AU	opposition	996 Sep 26 j 19:40	9°♄08'38	-2°-48'-49
direct	990 Sep 20 j 13:18	21°☾12'32		min. Earth dist.	996 Sep 26 j 19:27	9°♄08'40	8.27802 AU
evening set	990 Dec 29 j 08:26	28°☾16'41		direct	996 Dec 02 j 18:06	5°♄44'40	
	991 Jan 12 j 19:42	0°♊		evening set	997 Mar 13 j 22:02	13°♄31'12	
conjunction	991 Jan 15 j 01:22	0°♊16'06	0°-36'-37	conjunction	997 Mar 31 j 07:45	15°♄44'04	-2°-16'-34
minimum elong	991 Jan 15 j 01:21	0°♊16'06	0°36'39	minimum elong	997 Mar 31 j 07:45	15°♄44'04	2°16'34
max. Earth dist.	991 Jan 14 j 18:52	0°♊14'10	10.88804 AU	max. Earth dist.	997 Mar 31 j 08:35	15°♄44'20	10.22493 AU
morning rise	991 Jan 31 j 20:44	2°♊16'19		morning rise	997 Apr 17 j 21:57	17°♄58'25	
retrograde	991 May 15 j 08:07	9°♊36'06		retrograde	997 Aug 03 j 01:18	26°♄11'44	
opposition	991 Jul 25 j 03:51	6°♊14'34	-1°-1'-32	opposition	997 Oct 10 j 15:30	22°♄42'06	-2°-48'-16
min. Earth dist.	991 Jul 25 j 08:53	6°♊13'37	8.84136 AU	min. Earth dist.	997 Oct 10 j 13:53	22°♄42'25	8.17862 AU
direct	991 Oct 02 j 12:41	2°♊55'43		direct	997 Dec 16 j 05:28	19°♄16'53	
evening set	992 Jan 10 j 05:07	10°♊04'16		evening set	998 Mar 28 j 02:29	27°♄11'49	
conjunction	992 Jan 26 j 23:36	12°♊05'18	-1°-2'-57	conjunction	998 Apr 14 j 16:42	29°♄27'20	-2°-12'-1
minimum elong	992 Jan 26 j 23:34	12°♊05'17	1°02'59	minimum elong	998 Apr 14 j 16:44	29°♄27'20	2°12'02
max. Earth dist.	992 Jan 26 j 17:46	12°♊03'32	10.79145 AU	max. Earth dist.	998 Apr 14 j 18:43	29°♄27'59	10.13378 AU
morning rise	992 Feb 12 j 21:12	14°♊07'20			998 Apr 18 j 21:51	0°♄	
	992 Feb 20 j 08:59	15°♊		morning rise	998 May 02 j 11:09	1°♄44'13	
retrograde	992 May 27 j 04:41	21°♊35'35		retrograde	998 Aug 17 j 14:29	10°♄03'01	
opposition	992 Aug 05 j 19:58	18°♊12'33	-1°-32'-51	opposition	998 Oct 24 j 16:03	6°♄32'49	-2°-38'-1
min. Earth dist.	992 Aug 06 j 00:09	18°♊11'45	8.73828 AU	min. Earth dist.	998 Oct 24 j 13:31	6°♄33'20	8.09717 AU
	992 Oct 02 j 00:20	15°♊		direct	998 Dec 30 j 01:28	3°♄06'24	
direct	992 Oct 13 j 16:21	14°♊52'59		evening set	999 Apr 11 j 15:39	11°♄08'48	
	992 Oct 25 j 06:27	15°♊					
evening set	993 Jan 21 j 09:02	22°♊07'18		conjunction	999 Apr 29 j 10:30	13°♄26'43	-1°-59'-43
conjunction	993 Feb 07 j 05:23	24°♊10'14	-1°-27'-2	minimum elong	999 Apr 29 j 10:33	13°♄26'44	1°59'44
minimum elong	993 Feb 07 j 05:20	24°♊10'13	1°27'03	max. Earth dist.	999 Apr 29 j 13:49	13°♄27'47	10.06350 AU
max. Earth dist.	993 Feb 06 j 23:36	24°♊08'28	10.68259 AU	morning rise	999 May 11 j 10:10	15°♄	
morning rise	993 Feb 24 j 05:42	26°♊14'24		retrograde	999 Sep 01 j 05:12	24°♄07'35	
	993 Mar 30 j 02:02	0°♋		opposition	999 Nov 07 j 20:00	20°♄37'12	-2°-18'-8
retrograde	993 Jun 09 j 08:42	3°♋51'55		min. Earth dist.	999 Nov 07 j 16:41	20°♄37'53	8.03888 AU
opposition	993 Aug 18 j 17:19	0°♋27'21	-2°00'-47	direct	1000 Jan 13 j 04:13	17°♄09'43	
min. Earth dist.	993 Aug 18 j 21:15	0°♋26'36	8.62527 AU	evening set	1000 Apr 25 j 12:18	25°♄18'11	
	993 Aug 24 j 15:57	30°♊					
direct	993 Oct 26 j 00:31	27°♊06'51		conjunction	1000 May 13 j 11:28	27°♄38'01	-1°-40'-3
	993 Dec 23 j 21:25	0°♋		minimum elong	1000 May 13 j 11:32	27°♄38'03	1°40'05
evening set	994 Feb 02 j 21:35	4°♋28'11		max. Earth dist.	1000 May 13 j 16:03	27°♄39'31	10.01871 AU
conjunction	994 Feb 19 j 20:21	6°♋33'17	-1°-47'-39	morning rise	1000 May 31 j 13:22	29°♄58'42	
minimum elong	994 Feb 19 j 20:19	6°♋33'17	1°47'39		1000 May 31 j 17:25	0°♌	
max. Earth dist.	994 Feb 19 j 15:29	6°♋31'47	10.56606 AU	retrograde	1000 Sep 14 j 20:38	8°♌20'40	
morning rise	994 Mar 08 j 23:38	8°♋39'47		opposition	1000 Nov 21 j 01:42	4°♌50'32	-1°-49'-35
retrograde	994 Jun 22 j 19:08	16°♋27'01		min. Earth dist.	1000 Nov 20 j 21:37	4°♌51'23	8.00770 AU
opposition	994 Aug 31 j 20:10	13°♋00'56	-2°-23'-47	direct	1001 Jan 26 j 11:58	1°♌22'09	
min. Earth dist.	994 Aug 31 j 23:22	13°♋00'19	8.50721 AU	evening set	1001 May 10 j 14:06	9°♌34'52	
direct	994 Nov 07 j 15:15	9°♋39'21		conjunction	1001 May 28 j 16:43	11°♌55'57	-1°-14'-9
evening set	995 Feb 15 j 19:31	17°♋08'40		minimum elong	1001 May 28 j 16:46	11°♌55'58	1°14'11
conjunction	995 Mar 04 j 21:22	19°♋16'12	-2°-3'-32	max. Earth dist.	1001 May 28 j 22:40	11°♌57'54	10.00248 AU
minimum elong	995 Mar 04 j 21:20	19°♋16'12	2°03'32	morning rise	1001 Jun 15 j 20:47	14°♌17'28	
max. Earth dist.	995 Mar 04 j 18:24	19°♋15'16	10.44708 AU	retrograde	1001 Sep 29 j 10:42	22°♌36'50	
morning rise	995 Mar 22 j 03:53	21°♋25'13		opposition	1001 Dec 05 j 07:50	19°♌07'19	-1°-14'-7
retrograde	995 Jul 06 j 13:23	29°♋22'06		min. Earth dist.	1001 Dec 05 j 02:39	19°♌08'23	8.00591 AU
opposition	995 Sep 14 j 05:02	25°♋54'36	-2°-40'-17	direct	1002 Feb 09 j 23:25	15°♌38'18	
min. Earth dist.	995 Sep 14 j 06:41	25°♋54'16	8.38954 AU	evening set	1002 May 25 j 18:11	23°♌53'10	
direct	995 Nov 20 j 13:59	22°♋31'51		conjunction	1002 Jun 12 j 22:48	26°♌14'34	0°-43'-40



minimum elong	1002 Jun 12 j 22:50	26° $\Pi$ 14'35	0°43'41	morning rise	1007 Sep 10 j 03:00	7° $\Pi$ 05'06	
max. Earth dist.	1002 Jun 13 j 06:11	26° $\Pi$ 16'59	10.01605 AU	retrograde	1007 Dec 19 j 15:23	14° $\Pi$ 36'17	
morning rise	1002 Jul 01 j 03:26	28° $\Pi$ 35'59		opposition	1008 Feb 24 j 22:39	11° $\Pi$ 14'38	2°20'33
	1002 Jul 12 j 07:12	0° $\mathfrak{E}$		min. Earth dist.	1008 Feb 24 j 19:46	11° $\Pi$ 15'13	8.49787 AU
retrograde	1002 Oct 13 j 21:10	6° $\mathfrak{E}$ 50'18		direct	1008 May 04 j 15:13	7° $\Pi$ 47'36	
opposition	1002 Dec 19 j 12:40	3° $\mathfrak{E}$ 21'44	0°-34'-12	evening set	1008 Aug 18 j 15:03	15° $\Pi$ 35'37	
min. Earth dist.	1002 Dec 19 j 06:28	3° $\mathfrak{E}$ 23'01	8.03384 AU				
	1003 Feb 12 j 19:56	30° $\mathfrak{R}$ $\Pi$		conjunction	1008 Sep 05 j 00:51	17° $\Pi$ 43'37	2°01'45
direct	1003 Feb 24 j 12:42	29° $\Pi$ 52'24		minimum elong	1008 Sep 05 j 00:48	17° $\Pi$ 43'36	2°01'45
	1003 Mar 08 j 04:59	0° $\mathfrak{E}$		max. Earth dist.	1008 Sep 05 j 02:50	17° $\Pi$ 44'14	10.55528 AU
evening set	1003 Jun 09 j 21:53	8° $\mathfrak{E}$ 07'10		morning rise	1008 Sep 22 j 05:53	19° $\Pi$ 50'10	
				retrograde	1008 Dec 31 j 06:53	27° $\Pi$ 13'12	
conjunction	1003 Jun 28 j 02:48	10° $\mathfrak{E}$ 27'57	0°-10'-42	opposition	1009 Mar 08 j 22:30	23° $\Pi$ 52'49	2°37'30
minimum elong	1003 Jun 28 j 02:48	10° $\mathfrak{E}$ 27'57	0°10'44	min. Earth dist.	1009 Mar 08 j 20:33	23° $\Pi$ 53'12	8.61345 AU
behind sun begin	1003 Jun 27 j 21:14	10° $\mathfrak{E}$ 26'10		direct	1009 May 18 j 02:14	20° $\Pi$ 26'54	
behind sun end	1003 Jun 28 j 08:22	10° $\mathfrak{E}$ 29'45		evening set	1009 Aug 31 j 17:47	28° $\Pi$ 07'08	
max. Earth dist.	1003 Jun 28 j 11:02	10° $\mathfrak{E}$ 30'37	10.05865 AU		1009 Sep 16 j 06:28	0° $\mathfrak{A}$	
morning rise	1003 Jul 16 j 06:17	12° $\mathfrak{E}$ 48'18					
asc. node	1003 Oct 27 j 07:08	20° $\mathfrak{E}$ 55'31		conjunction	1009 Sep 17 j 22:50	0° $\mathfrak{A}$ 12'20	2°12'36
retrograde	1003 Oct 28 j 01:42	20° $\mathfrak{E}$ 55'33		minimum elong	1009 Sep 17 j 22:49	0° $\mathfrak{A}$ 12'19	2°12'37
opposition	1004 Jan 02 j 14:39	17° $\mathfrak{E}$ 28'13	0°07'23	max. Earth dist.	1009 Sep 17 j 23:49	0° $\mathfrak{A}$ 12'38	10.66796 AU
min. Earth dist.	1004 Jan 02 j 08:08	17° $\mathfrak{E}$ 29'33	8.08977 AU	morning rise	1009 Oct 04 j 23:03	2° $\mathfrak{A}$ 16'06	
direct	1004 Mar 10 j 01:34	13° $\mathfrak{E}$ 58'49		retrograde	1010 Jan 12 j 16:11	9° $\mathfrak{A}$ 31'58	
evening set	1004 Jun 23 j 22:14	22° $\mathfrak{E}$ 11'23		opposition	1010 Mar 21 j 17:13	6° $\mathfrak{A}$ 12'41	2°46'42
				min. Earth dist.	1010 Mar 21 j 16:47	6° $\mathfrak{A}$ 12'46	8.72284 AU
conjunction	1004 Jul 12 j 01:36	24° $\mathfrak{E}$ 30'37	0°22'36	direct	1010 May 31 j 05:45	2° $\mathfrak{A}$ 47'57	
minimum elong	1004 Jul 12 j 01:35	24° $\mathfrak{E}$ 30'37	0°22'35	evening set	1010 Sep 13 j 10:30	10° $\mathfrak{A}$ 20'28	
max. Earth dist.	1004 Jul 12 j 09:53	24° $\mathfrak{E}$ 33'16	10.12740 AU				
morning rise	1004 Jul 30 j 02:17	26° $\mathfrak{E}$ 49'01		conjunction	1010 Sep 30 j 11:18	12° $\mathfrak{A}$ 23'10	2°17'11
	1004 Aug 25 j 16:44	0° $\mathfrak{Q}$		minimum elong	1010 Sep 30 j 11:17	12° $\mathfrak{A}$ 23'10	2°17'12
retrograde	1004 Nov 09 j 23:31	4° $\mathfrak{Q}$ 47'49		max. Earth dist.	1010 Sep 30 j 10:47	12° $\mathfrak{A}$ 23'00	10.77247 AU
opposition	1005 Jan 15 j 12:45	1° $\mathfrak{Q}$ 21'53	0°47'51	morning rise	1010 Oct 17 j 07:32	14° $\mathfrak{A}$ 24'34	
min. Earth dist.	1005 Jan 15 j 06:39	1° $\mathfrak{Q}$ 23'08	8.16995 AU	retrograde	1011 Jan 24 j 19:13	21° $\mathfrak{A}$ 34'20	
	1005 Feb 01 j 17:37	30° $\mathfrak{R}$ $\mathfrak{E}$		opposition	1011 Apr 03 j 07:19	18° $\mathfrak{A}$ 15'57	2°48'17
direct	1005 Mar 24 j 11:37	27° $\mathfrak{E}$ 52'42		min. Earth dist.	1011 Apr 03 j 08:43	18° $\mathfrak{A}$ 15'41	8.82198 AU
	1005 May 13 j 11:25	0° $\mathfrak{Q}$		direct	1011 Jun 13 j 03:42	14° $\mathfrak{A}$ 52'21	
evening set	1005 Jul 08 j 16:20	6° $\mathfrak{Q}$ 01'05		evening set	1011 Sep 25 j 18:18	22° $\mathfrak{A}$ 17'30	
conjunction	1005 Jul 26 j 16:29	8° $\mathfrak{Q}$ 18'01	0°54'00	conjunction	1011 Oct 12 j 15:26	24° $\mathfrak{A}$ 18'06	2°15'42
minimum elong	1005 Jul 26 j 16:27	8° $\mathfrak{Q}$ 18'00	0°54'00	minimum elong	1011 Oct 12 j 15:26	24° $\mathfrak{A}$ 18'06	2°15'42
max. Earth dist.	1005 Jul 26 j 23:59	8° $\mathfrak{Q}$ 20'24	10.21770 AU	max. Earth dist.	1011 Oct 12 j 12:47	24° $\mathfrak{A}$ 17'19	10.86497 AU
morning rise	1005 Aug 13 j 13:01	10° $\mathfrak{Q}$ 33'47		morning rise	1011 Oct 29 j 08:40	26° $\mathfrak{A}$ 17'34	
	1005 Sep 21 j 11:23	15° $\mathfrak{Q}$			1011 Dec 02 j 15:26	0° $\mathfrak{M}$	
retrograde	1005 Nov 23 j 13:42	18° $\mathfrak{Q}$ 23'23		retrograde	1012 Feb 05 j 17:58	3° $\mathfrak{M}$ 22'23	
opposition	1006 Jan 29 j 05:52	14° $\mathfrak{Q}$ 58'55	1°24'43	opposition	1012 Apr 14 j 17:17	0° $\mathfrak{M}$ 04'38	2°42'41
min. Earth dist.	1006 Jan 29 j 00:52	14° $\mathfrak{Q}$ 59'56	8.26913 AU	min. Earth dist.	1012 Apr 14 j 20:03	0° $\mathfrak{M}$ 04'07	8.90719 AU
	1006 Jan 29 j 00:31	15° $\mathfrak{R}$ $\mathfrak{Q}$			1012 Apr 15 j 17:57	30° $\mathfrak{R}$ $\mathfrak{A}$	
direct	1006 Apr 07 j 17:55	11° $\mathfrak{Q}$ 30'14		direct	1012 Jun 24 j 19:25	26° $\mathfrak{A}$ 42'09	
	1006 Jun 12 j 16:54	15° $\mathfrak{Q}$			1012 Aug 30 j 00:46	0° $\mathfrak{M}$	
evening set	1006 Jul 23 j 02:03	19° $\mathfrak{Q}$ 32'48		evening set	1012 Oct 06 j 18:04	4° $\mathfrak{M}$ 00'30	
conjunction	1006 Aug 09 j 21:50	21° $\mathfrak{Q}$ 46'54	1°21'49	conjunction	1012 Oct 23 j 12:25	5° $\mathfrak{M}$ 59'26	2°08'33
minimum elong	1006 Aug 09 j 21:47	21° $\mathfrak{Q}$ 46'53	1°21'48	minimum elong	1012 Oct 23 j 12:26	5° $\mathfrak{M}$ 59'27	2°08'32
max. Earth dist.	1006 Aug 10 j 03:30	21° $\mathfrak{Q}$ 48'41	10.32376 AU	max. Earth dist.	1012 Oct 23 j 08:20	5° $\mathfrak{M}$ 58'13	10.94210 AU
morning rise	1006 Aug 27 j 13:26	23° $\mathfrak{Q}$ 59'39		morning rise	1012 Nov 09 j 03:32	7° $\mathfrak{M}$ 57'25	
	1006 Oct 24 j 10:11	0° $\mathfrak{M}$		retrograde	1013 Feb 16 j 13:24	14° $\mathfrak{M}$ 58'38	
retrograde	1006 Dec 06 j 19:01	1° $\mathfrak{M}$ 39'51		opposition	1013 Apr 27 j 00:01	11° $\mathfrak{M}$ 41'13	2°30'31
	1007 Jan 20 j 02:23	30° $\mathfrak{R}$ $\mathfrak{Q}$		min. Earth dist.	1013 Apr 27 j 03:03	11° $\mathfrak{M}$ 40'39	8.97537 AU
opposition	1007 Feb 11 j 17:11	28° $\mathfrak{Q}$ 16'50	1°56'03	direct	1013 Jul 07 j 06:03	8° $\mathfrak{M}$ 19'45	
min. Earth dist.	1007 Feb 11 j 13:17	28° $\mathfrak{Q}$ 17'37	8.38089 AU		1013 Oct 13 j 19:24	15° $\mathfrak{M}$	
direct	1007 Apr 21 j 19:19	24° $\mathfrak{Q}$ 48'51		evening set	1013 Oct 18 j 11:03	15° $\mathfrak{M}$ 32'06	
	1007 Jul 13 j 15:05	0° $\mathfrak{M}$					
evening set	1007 Aug 06 j 01:49	2° $\mathfrak{M}$ 44'28		conjunction	1013 Nov 04 j 03:33	17° $\mathfrak{M}$ 29'49	1°56'16
				minimum elong	1013 Nov 04 j 03:35	17° $\mathfrak{M}$ 29'50	1°56'15
conjunction	1007 Aug 23 j 16:40	4° $\mathfrak{M}$ 55'29	1°44'40	max. Earth dist.	1013 Nov 03 j 23:27	17° $\mathfrak{M}$ 28'37	11.00101 AU
minimum elong	1007 Aug 23 j 16:37	4° $\mathfrak{M}$ 55'29	1°44'40	morning rise	1013 Nov 20 j 17:18	19° $\mathfrak{M}$ 26'48	
max. Earth dist.	1007 Aug 23 j 20:18	4° $\mathfrak{M}$ 56'37	10.43867 AU	retrograde	1014 Feb 28 j 09:19	26° $\mathfrak{M}$ 25'48	



opposition	1014 May 09 j 04:12	23° $\mathbb{M}$ 08'28	2°12'31	retrograde	1020 May 09 j 11:06	4° $\approx$ 56'26	
min. Earth dist.	1014 May 09 j 07:42	23° $\mathbb{M}$ 07'49	9.02405 AU	opposition	1020 Jul 19 j 07:55	1° $\approx$ 35'09	0°-47'-51
direct	1014 Jul 19 j 11:37	19° $\mathbb{M}$ 47'53		min. Earth dist.	1020 Jul 19 j 12:44	1° $\approx$ 34'15	8.86781 AU
evening set	1014 Oct 29 j 23:15	26° $\mathbb{M}$ 55'18			1020 Aug 10 j 09:35	30° $\mathbb{R}$ $\mathbb{S}$	
				direct	1020 Sep 26 j 20:26	28° $\mathbb{S}$ 16'14	
conjunction	1014 Nov 15 j 14:29	28° $\mathbb{M}$ 52'15	1°39'29		1020 Nov 11 j 16:29	0° $\approx$	
minimum elong	1014 Nov 15 j 14:31	28° $\mathbb{M}$ 52'16	1°39'28	evening set	1021 Jan 04 j 15:11	5° $\approx$ 23'15	
max. Earth dist.	1014 Nov 15 j 09:51	28° $\mathbb{M}$ 50'53	11.03956 AU				
	1014 Nov 25 j 04:28	0° $\mathbb{A}$		conjunction	1021 Jan 21 j 08:53	7° $\approx$ 23'41	0°-52'-12
morning rise	1014 Dec 02 j 03:38	0° $\mathbb{A}$ 48'41		minimum elong	1021 Jan 21 j 08:51	7° $\approx$ 23'40	0°52'12
retrograde	1015 Mar 12 j 02:41	7° $\mathbb{A}$ 46'51		max. Earth dist.	1021 Jan 21 j 03:10	7° $\approx$ 21'57	10.82373 AU
opposition	1015 May 21 j 06:45	4° $\mathbb{A}$ 29'24	1°49'31	morning rise	1021 Feb 07 j 05:42	9° $\approx$ 25'02	
min. Earth dist.	1015 May 21 j 11:20	4° $\mathbb{A}$ 28'33	9.05164 AU		1021 Apr 04 j 01:36	15° $\approx$	
direct	1015 Jul 31 j 10:45	1° $\mathbb{A}$ 09'32		retrograde	1021 May 22 j 03:33	16° $\approx$ 49'58	
evening set	1015 Nov 10 j 08:12	8° $\mathbb{A}$ 13'17			1021 Jul 10 j 16:49	15° $\mathbb{R}$ $\approx$	
				opposition	1021 Jul 31 j 22:07	13° $\approx$ 27'26	-1°-20'-8
conjunction	1015 Nov 26 j 22:38	10° $\mathbb{A}$ 09'52	1°18'55	min. Earth dist.	1021 Aug 01 j 02:23	13° $\approx$ 26'37	8.77593 AU
minimum elong	1015 Nov 26 j 22:40	10° $\mathbb{A}$ 09'53	1°18'55	direct	1021 Oct 08 j 23:54	10° $\approx$ 08'04	
max. Earth dist.	1015 Nov 26 j 16:39	10° $\mathbb{A}$ 08'06	11.05658 AU		1021 Dec 27 j 06:40	15° $\approx$	
morning rise	1015 Dec 13 j 12:02	12° $\mathbb{A}$ 06'12		evening set	1022 Jan 16 j 16:02	17° $\approx$ 20'12	
retrograde	1016 Mar 22 j 20:47	19° $\mathbb{A}$ 05'06					
opposition	1016 Jun 01 j 08:57	15° $\mathbb{A}$ 47'16	1°22'23	conjunction	1022 Feb 02 j 11:37	19° $\approx$ 22'22	-1°-17'-21
min. Earth dist.	1016 Jun 01 j 14:29	15° $\mathbb{A}$ 46'15	9.05734 AU	minimum elong	1022 Feb 02 j 11:35	19° $\approx$ 22'21	1°17'22
direct	1016 Aug 11 j 09:50	12° $\mathbb{A}$ 27'58		max. Earth dist.	1022 Feb 02 j 07:26	19° $\approx$ 21'06	10.72528 AU
evening set	1016 Nov 20 j 15:22	19° $\mathbb{A}$ 29'24		morning rise	1022 Feb 19 j 10:46	21° $\approx$ 25'40	
				retrograde	1022 Jun 04 j 05:13	28° $\approx$ 59'28	
conjunction	1016 Dec 07 j 05:38	21° $\mathbb{A}$ 26'02	0°55'19	opposition	1022 Aug 13 j 17:19	25° $\approx$ 35'35	-1°-49'-38
minimum elong	1016 Dec 07 j 05:40	21° $\mathbb{A}$ 26'03	0°55'19	min. Earth dist.	1022 Aug 13 j 20:10	25° $\approx$ 35'03	8.67239 AU
max. Earth dist.	1016 Dec 06 j 23:09	21° $\mathbb{A}$ 24'07	11.05156 AU	direct	1022 Oct 21 j 06:30	22° $\approx$ 15'37	
morning rise	1016 Dec 23 j 19:48	23° $\mathbb{A}$ 22'39		evening set	1023 Jan 29 j 00:57	29° $\approx$ 34'05	
	1017 Mar 12 j 16:05	0° $\mathbb{S}$			1023 Feb 01 j 14:31	0° $\mathbb{H}$	
retrograde	1017 Apr 03 j 18:11	0° $\mathbb{S}$ 23'52					
	1017 Apr 26 j 02:52	30° $\mathbb{R}$ $\mathbb{A}$		conjunction	1023 Feb 14 j 22:44	1° $\mathbb{H}$ 38'16	-1°-39'-32
opposition	1017 Jun 13 j 11:30	27° $\mathbb{A}$ 05'26	0°52'02	minimum elong	1023 Feb 14 j 22:41	1° $\mathbb{H}$ 38'15	1°39'32
min. Earth dist.	1017 Jun 13 j 16:48	27° $\mathbb{A}$ 04'27	9.04094 AU	max. Earth dist.	1023 Feb 14 j 20:01	1° $\mathbb{H}$ 37'26	10.61718 AU
direct	1017 Aug 23 j 06:46	23° $\mathbb{A}$ 46'32		morning rise	1023 Mar 04 j 00:31	3° $\mathbb{H}$ 43'45	
	1017 Nov 25 j 02:12	0° $\mathbb{S}$		retrograde	1023 Jun 17 j 14:11	11° $\mathbb{H}$ 27'00	
evening set	1017 Dec 01 j 22:45	0° $\mathbb{S}$ 47'04		opposition	1023 Aug 26 j 18:07	8° $\mathbb{H}$ 01'47	-2°-14'-49
				min. Earth dist.	1023 Aug 26 j 19:29	8° $\mathbb{H}$ 01'31	8.56166 AU
conjunction	1017 Dec 18 j 13:29	2° $\mathbb{S}$ 44'09	0°29'29	direct	1023 Nov 02 j 17:48	4° $\mathbb{H}$ 41'02	
minimum elong	1017 Dec 18 j 13:30	2° $\mathbb{S}$ 44'09	0°29'30	evening set	1024 Feb 10 j 19:09	12° $\mathbb{H}$ 06'53	
max. Earth dist.	1017 Dec 18 j 07:36	2° $\mathbb{S}$ 42'25	11.02451 AU				
morning rise	1018 Jan 04 j 04:41	4° $\mathbb{S}$ 41'27		conjunction	1024 Feb 27 j 19:33	14° $\mathbb{H}$ 13'19	-1°-57'-29
retrograde	1018 Apr 15 j 18:26	11° $\mathbb{S}$ 46'28		minimum elong	1024 Feb 27 j 19:31	14° $\mathbb{H}$ 13'19	1°57'30
opposition	1018 Jun 25 j 15:18	8° $\mathbb{S}$ 27'14	0°19'28	max. Earth dist.	1024 Feb 27 j 17:36	14° $\mathbb{H}$ 12'43	10.50440 AU
min. Earth dist.	1018 Jun 25 j 20:03	8° $\mathbb{S}$ 26'22	9.00289 AU	morning rise	1024 Mar 16 j 00:31	16° $\mathbb{H}$ 21'12	
direct	1018 Sep 04 j 02:24	5° $\mathbb{S}$ 08'33		retrograde	1024 Jun 30 j 06:12	24° $\mathbb{H}$ 13'57	
evening set	1018 Dec 13 j 08:07	12° $\mathbb{S}$ 09'44		opposition	1024 Sep 08 j 00:42	20° $\mathbb{H}$ 47'28	-2°-34'-8
				min. Earth dist.	1024 Sep 08 j 01:17	20° $\mathbb{H}$ 47'21	8.44890 AU
conjunction	1018 Dec 29 j 23:32	14° $\mathbb{S}$ 07'37	0°02'22	direct	1024 Nov 14 j 12:31	17° $\mathbb{H}$ 25'44	
minimum elong	1018 Dec 29 j 23:33	14° $\mathbb{S}$ 07'37	0°02'22	evening set	1025 Feb 22 j 23:08	24° $\mathbb{H}$ 59'42	
behind sun begin	1018 Dec 29 j 16:34	14° $\mathbb{S}$ 05'34					
behind sun end	1018 Dec 30 j 06:31	14° $\mathbb{S}$ 09'40		conjunction	1025 Mar 12 j 02:50	27° $\mathbb{H}$ 08'36	-2°-10'00
max. Earth dist.	1018 Dec 29 j 17:55	14° $\mathbb{S}$ 05'59	10.97623 AU	minimum elong	1025 Mar 12 j 02:48	27° $\mathbb{H}$ 08'35	2°10'01
morning rise	1019 Jan 15 j 16:14	16° $\mathbb{S}$ 05'56		max. Earth dist.	1025 Mar 12 j 01:40	27° $\mathbb{H}$ 08'14	10.39224 AU
desc. node	1019 Jan 30 j 08:59	17° $\mathbb{S}$ 45'51		morning rise	1025 Mar 29 j 11:25	29° $\mathbb{H}$ 19'01	
retrograde	1019 Apr 28 j 00:47	23° $\mathbb{S}$ 16'15			1025 Apr 04 j 01:15	0° $\mathbb{Y}$	
opposition	1019 Jul 07 j 21:49	19° $\mathbb{S}$ 56'05	0°-14'-12	retrograde	1025 Jul 14 j 05:41	7° $\mathbb{Y}$ 20'46	
min. Earth dist.	1019 Jul 08 j 02:26	19° $\mathbb{S}$ 55'14	8.94445 AU	opposition	1025 Sep 21 j 13:02	3° $\mathbb{Y}$ 53'08	-2°-46'-3
direct	1019 Sep 15 j 22:51	16° $\mathbb{S}$ 37'24		min. Earth dist.	1025 Sep 21 j 13:03	3° $\mathbb{Y}$ 53'07	8.33936 AU
evening set	1019 Dec 24 j 21:01	23° $\mathbb{S}$ 40'44		direct	1025 Nov 27 j 14:13	0° $\mathbb{Y}$ 30'16	
				evening set	1026 Mar 08 j 13:17	8° $\mathbb{Y}$ 12'39	
conjunction	1020 Jan 10 j 13:20	25° $\mathbb{S}$ 39'43	0°-25'-16				
minimum elong	1020 Jan 10 j 13:19	25° $\mathbb{S}$ 39'43	0°25'18	conjunction	1026 Mar 25 j 20:53	10° $\mathbb{Y}$ 24'08	-2°-16'00
max. Earth dist.	1020 Jan 10 j 07:08	25° $\mathbb{S}$ 37'53	10.90846 AU	minimum elong	1026 Mar 25 j 20:53	10° $\mathbb{Y}$ 24'08	2°16'01
morning rise	1020 Jan 27 j 07:57	27° $\mathbb{S}$ 39'26		max. Earth dist.	1026 Mar 25 j 21:01	10° $\mathbb{Y}$ 24'10	10.28601 AU
	1020 Feb 17 j 03:53	0° $\approx$		morning rise	1026 Apr 12 j 09:21	12° $\mathbb{Y}$ 37'08	



retrograde	1026 Jul 28 j 10:46	20° $\Upsilon$ 46'45		conjunction	1032 Jun 21 j 02:38	4° $\Theta$ 43'12	0°-24'-42
opposition	1026 Oct 05 j 06:38	17° $\Upsilon$ 18'08	-2°-49'-20	minimum elong	1032 Jun 21 j 02:39	4° $\Theta$ 43'12	0°24'43
min. Earth dist.	1026 Oct 05 j 05:55	17° $\Upsilon$ 18'16	8.23825 AU	max. Earth dist.	1032 Jun 21 j 08:38	4° $\Theta$ 45'08	10.04606 AU
direct	1026 Dec 10 j 23:54	13° $\Upsilon$ 54'03		morning rise	1032 Jul 09 j 06:50	7° $\Theta$ 03'56	
evening set	1027 Mar 22 j 13:14	21° $\Upsilon$ 44'43		retrograde	1032 Oct 21 j 11:24	15° $\Theta$ 13'44	
				opposition	1032 Dec 27 j 01:25	11° $\Theta$ 45'54	0°-10'-9
conjunction	1027 Apr 09 j 01:20	23° $\Upsilon$ 58'49	-2°-14'-39	min. Earth dist.	1032 Dec 26 j 20:41	11° $\Theta$ 46'53	8.06960 AU
minimum elong	1027 Apr 09 j 01:22	23° $\Upsilon$ 58'50	2°14'40	direct	1033 Mar 04 j 08:14	8° $\Theta$ 16'25	
max. Earth dist.	1027 Apr 09 j 03:12	23° $\Upsilon$ 59'25	10.19084 AU	asc. node	1033 Mar 29 j 17:17	8° $\Theta$ 51'36	
morning rise	1027 Apr 26 j 17:52	26° $\Upsilon$ 14'22		evening set	1033 Jun 17 j 23:17	16° $\Theta$ 29'33	
	1027 May 28 j 14:44	0° $\Upsilon$					
retrograde	1027 Aug 11 j 20:53	4° $\Upsilon$ 30'11		conjunction	1033 Jul 06 j 03:20	18° $\Theta$ 49'24	0°08'40
opposition	1027 Oct 19 j 04:57	1° $\Upsilon$ 00'50	-2°-43'-8	minimum elong	1033 Jul 06 j 03:19	18° $\Theta$ 49'24	0°08'40
min. Earth dist.	1027 Oct 19 j 03:03	1° $\Upsilon$ 01'13	8.15042 AU	behind sun begin	1033 Jul 05 j 20:59	18° $\Theta$ 47'22	
	1027 Oct 31 j 20:53	30° $\Upsilon$		behind sun end	1033 Jul 06 j 09:39	18° $\Theta$ 51'25	
direct	1027 Dec 24 j 16:59	27° $\Upsilon$ 35'34		max. Earth dist.	1033 Jul 06 j 09:19	18° $\Theta$ 51'19	10.09984 AU
	1028 Feb 14 j 17:29	0° $\Upsilon$		morning rise	1033 Jul 24 j 05:30	21° $\Theta$ 08'36	
evening set	1028 Apr 04 j 22:23	5° $\Upsilon$ 33'57		retrograde	1033 Nov 04 j 10:39	29° $\Theta$ 10'36	
				opposition	1034 Jan 10 j 00:44	25° $\Theta$ 43'55	0°31'00
conjunction	1028 Apr 22 j 15:16	7° $\Upsilon$ 50'36	-2°-5'-34	min. Earth dist.	1034 Jan 09 j 19:45	25° $\Theta$ 44'56	8.13564 AU
minimum elong	1028 Apr 22 j 15:19	7° $\Upsilon$ 50'37	2°05'35	direct	1034 Mar 18 j 19:29	22° $\Theta$ 14'23	
max. Earth dist.	1028 Apr 22 j 18:37	7° $\Upsilon$ 51'41	10.11161 AU		1034 Jun 29 j 13:47	0° $\Omega$	
morning rise	1028 May 10 j 11:54	10° $\Upsilon$ 08'29		evening set	1034 Jul 02 j 19:23	0° $\Omega$ 24'12	
	1028 Jun 21 j 16:51	15° $\Upsilon$					
retrograde	1028 Aug 25 j 10:45	18° $\Upsilon$ 28'23		conjunction	1034 Jul 20 j 21:03	2° $\Omega$ 42'07	0°41'00
opposition	1028 Nov 01 j 07:05	14° $\Upsilon$ 58'39	-2°-27'-14	minimum elong	1034 Jul 20 j 21:01	2° $\Omega$ 42'07	0°40'59
min. Earth dist.	1028 Nov 01 j 03:57	14° $\Upsilon$ 59'17	8.08100 AU	max. Earth dist.	1034 Jul 21 j 03:00	2° $\Omega$ 44'01	10.17720 AU
	1028 Nov 01 j 00:29	15° $\Upsilon$		morning rise	1034 Aug 07 j 19:40	4° $\Omega$ 59'02	
direct	1029 Jan 06 j 15:59	11° $\Upsilon$ 32'13		retrograde	1034 Nov 18 j 03:29	12° $\Omega$ 52'16	
	1029 Mar 10 j 21:39	15° $\Upsilon$		opposition	1035 Jan 23 j 19:21	9° $\Omega$ 26'50	1°09'35
evening set	1029 Apr 19 j 15:45	19° $\Upsilon$ 37'20		min. Earth dist.	1035 Jan 23 j 14:10	9° $\Omega$ 27'53	8.22305 AU
				direct	1035 Apr 02 j 03:14	5° $\Omega$ 57'34	
conjunction	1029 May 07 j 13:10	21° $\Upsilon$ 56'10	-1°-48'-55	evening set	1035 Jul 17 j 08:14	14° $\Omega$ 02'24	
minimum elong	1029 May 07 j 13:13	21° $\Upsilon$ 56'11	1°48'56		1035 Jul 25 j 00:24	15° $\Omega$	
max. Earth dist.	1029 May 07 j 17:45	21° $\Upsilon$ 57'39	10.05377 AU				
morning rise	1029 May 25 j 13:25	24° $\Upsilon$ 15'56		conjunction	1035 Aug 04 j 06:10	16° $\Omega$ 17'45	1°10'28
	1029 Jul 15 j 19:50	0° $\Upsilon$		minimum elong	1035 Aug 04 j 06:07	16° $\Omega$ 17'45	1°10'27
retrograde	1029 Sep 09 j 02:58	2° $\Upsilon$ 37'18		max. Earth dist.	1035 Aug 04 j 11:58	16° $\Omega$ 19'36	10.27309 AU
	1029 Nov 04 j 18:42	30° $\Upsilon$		morning rise	1035 Aug 22 j 00:03	18° $\Omega$ 31'50	
opposition	1029 Nov 15 j 11:41	29° $\Upsilon$ 07'32	-2°-2'-13	retrograde	1035 Dec 01 j 12:14	26° $\Omega$ 15'53	
min. Earth dist.	1029 Nov 15 j 07:35	29° $\Upsilon$ 08'23	8.03545 AU	opposition	1036 Feb 06 j 08:30	22° $\Omega$ 51'49	1°43'25
direct	1030 Jan 20 j 20:07	25° $\Upsilon$ 40'03		min. Earth dist.	1036 Feb 06 j 03:52	22° $\Omega$ 52'45	8.32630 AU
	1030 Apr 02 j 12:43	0° $\Upsilon$		direct	1036 Apr 15 j 05:59	19° $\Omega$ 23'05	
evening set	1030 May 04 j 15:11	3° $\Upsilon$ 50'17		evening set	1036 Jul 30 j 11:57	27° $\Omega$ 21'37	
conjunction	1030 May 22 j 16:23	6° $\Upsilon$ 10'41	-1°-25'-31	conjunction	1036 Aug 17 j 05:13	29° $\Omega$ 34'01	1°35'32
minimum elong	1030 May 22 j 16:27	6° $\Upsilon$ 10'42	1°25'32	minimum elong	1036 Aug 17 j 05:10	29° $\Omega$ 34'00	1°35'32
max. Earth dist.	1030 May 22 j 21:57	6° $\Upsilon$ 12'30	10.02218 AU	max. Earth dist.	1036 Aug 17 j 10:18	29° $\Omega$ 35'37	10.38170 AU
morning rise	1030 Jun 09 j 19:24	8° $\Upsilon$ 31'41			1036 Aug 20 j 16:01	0° $\Upsilon$	
retrograde	1030 Sep 23 j 18:17	16° $\Upsilon$ 51'42		morning rise	1036 Sep 03 j 17:46	1° $\Upsilon$ 45'01	
opposition	1030 Nov 29 j 17:28	13° $\Upsilon$ 22'15	-1°-29'-30	retrograde	1036 Dec 13 j 12:53	9° $\Upsilon$ 19'59	
min. Earth dist.	1030 Nov 29 j 12:51	13° $\Upsilon$ 23'13	8.01773 AU	opposition	1037 Feb 18 j 16:10	5° $\Upsilon$ 57'18	2°10'56
direct	1031 Feb 04 j 05:42	9° $\Upsilon$ 53'51		min. Earth dist.	1037 Feb 18 j 12:46	5° $\Upsilon$ 57'58	8.43942 AU
evening set	1031 May 19 j 18:03	18° $\Upsilon$ 07'13		direct	1037 Apr 29 j 02:50	2° $\Upsilon$ 29'22	
				evening set	1037 Aug 13 j 05:18	10° $\Upsilon$ 20'38	
conjunction	1031 Jun 06 j 21:52	20° $\Upsilon$ 28'22	0°-56'-48	conjunction	1037 Aug 30 j 17:23	12° $\Upsilon$ 29'59	1°55'08
minimum elong	1031 Jun 06 j 21:54	20° $\Upsilon$ 28'23	0°56'49	minimum elong	1037 Aug 30 j 17:21	12° $\Upsilon$ 29'58	1°55'08
max. Earth dist.	1031 Jun 07 j 03:50	20° $\Upsilon$ 30'19	10.01954 AU	max. Earth dist.	1037 Aug 30 j 20:55	12° $\Upsilon$ 31'05	10.49707 AU
morning rise	1031 Jun 25 j 02:19	22° $\Upsilon$ 49'44		morning rise	1037 Sep 17 j 00:38	14° $\Upsilon$ 37'52	
	1031 Sep 03 j 12:22	0° $\Upsilon$		retrograde	1037 Dec 26 j 06:38	22° $\Upsilon$ 04'17	
retrograde	1031 Oct 08 j 05:47	1° $\Upsilon$ 05'45		opposition	1038 Mar 03 j 18:06	18° $\Upsilon$ 42'55	2°31'10
	1031 Nov 12 j 02:57	30° $\Upsilon$		min. Earth dist.	1038 Mar 03 j 16:05	18° $\Upsilon$ 43'19	8.55641 AU
opposition	1031 Dec 13 j 22:37	27° $\Upsilon$ 36'58	0°-51'-15	direct	1038 May 12 j 16:20	15° $\Upsilon$ 16'01	
min. Earth dist.	1031 Dec 13 j 17:59	27° $\Upsilon$ 37'56	8.02937 AU	evening set	1038 Aug 26 j 12:09	22° $\Upsilon$ 59'30	
direct	1032 Feb 18 j 18:32	24° $\Upsilon$ 07'53					
	1032 May 14 j 15:35	0° $\Upsilon$					
evening set	1032 Jun 02 j 21:50	2° $\Upsilon$ 22'13		conjunction	1038 Sep 12 j 19:11	25° $\Upsilon$ 05'54	2°08'41



minimum elong	1038 Sep 12 j 19:09	25° $\mathbb{M}$ 05'54	2°08'41	conjunction	1044 Nov 21 j 07:39	5° $\mathbb{Z}$ 25'26	1°28'22
max. Earth dist.	1038 Sep 12 j 20:43	25° $\mathbb{M}$ 06'23	10.61343 AU	minimum elong	1044 Nov 21 j 07:42	5° $\mathbb{Z}$ 25'27	1°28'22
morning rise	1038 Sep 29 j 21:33	27° $\mathbb{M}$ 10'52		max. Earth dist.	1044 Nov 21 j 03:04	5° $\mathbb{Z}$ 24'05	11.06996 AU
	1038 Oct 24 j 14:06	0° $\mathbb{L}$		morning rise	1044 Dec 07 j 20:49	7° $\mathbb{Z}$ 21'33	
retrograde	1039 Jan 07 j 15:59	4° $\mathbb{L}$ 29'31		retrograde	1045 Mar 18 j 01:01	14° $\mathbb{Z}$ 19'18	
opposition	1039 Mar 16 j 14:18	1° $\mathbb{L}$ 09'21	2°43'42	opposition	1045 May 27 j 09:21	11° $\mathbb{Z}$ 02'10	1°34'44
min. Earth dist.	1039 Mar 16 j 13:20	1° $\mathbb{L}$ 09'33	8.67150 AU	min. Earth dist.	1045 May 27 j 13:10	11° $\mathbb{Z}$ 01'28	9.07721 AU
	1039 Mar 31 j 20:14	30° $\mathbb{R}$ $\mathbb{M}$		direct	1045 Aug 06 j 12:53	7° $\mathbb{Z}$ 43'12	
direct	1039 May 25 j 23:49	27° $\mathbb{M}$ 43'39		evening set	1045 Nov 16 j 00:26	14° $\mathbb{Z}$ 44'49	
	1039 Jul 18 j 17:20	0° $\mathbb{L}$					
evening set	1039 Sep 08 j 08:39	5° $\mathbb{L}$ 19'16		conjunction	1045 Dec 02 j 14:49	16° $\mathbb{Z}$ 41'12	1°06'02
				minimum elong	1045 Dec 02 j 14:51	16° $\mathbb{Z}$ 41'13	1°06'03
conjunction	1039 Sep 25 j 11:10	7° $\mathbb{L}$ 22'59	2°15'58	max. Earth dist.	1045 Dec 02 j 09:56	16° $\mathbb{Z}$ 39'46	11.07735 AU
minimum elong	1039 Sep 25 j 11:09	7° $\mathbb{L}$ 22'59	2°15'58	morning rise	1045 Dec 19 j 04:22	18° $\mathbb{Z}$ 37'25	
max. Earth dist.	1039 Sep 25 j 11:09	7° $\mathbb{L}$ 22'58	10.72527 AU	retrograde	1046 Mar 29 j 21:39	25° $\mathbb{Z}$ 36'40	
morning rise	1039 Oct 12 j 09:15	9° $\mathbb{L}$ 25'21		opposition	1046 Jun 08 j 11:16	22° $\mathbb{Z}$ 19'08	1°05'45
retrograde	1040 Jan 19 j 20:19	16° $\mathbb{L}$ 37'16		min. Earth dist.	1046 Jun 08 j 16:02	22° $\mathbb{Z}$ 18'15	9.07254 AU
opposition	1040 Mar 28 j 05:36	13° $\mathbb{L}$ 18'11	2°48'30	direct	1046 Aug 18 j 08:48	19° $\mathbb{Z}$ 00'42	
min. Earth dist.	1040 Mar 28 j 05:04	13° $\mathbb{L}$ 18'17	8.77933 AU	evening set	1046 Nov 27 j 07:30	26° $\mathbb{Z}$ 00'44	
direct	1040 Jun 07 j 00:53	9° $\mathbb{L}$ 53'47					
evening set	1040 Sep 19 j 19:29	17° $\mathbb{L}$ 21'43		conjunction	1046 Dec 13 j 21:50	27° $\mathbb{Z}$ 57'21	0°41'09
				minimum elong	1046 Dec 13 j 21:51	27° $\mathbb{Z}$ 57'21	0°41'09
conjunction	1040 Oct 06 j 18:12	19° $\mathbb{L}$ 23'06	2°17'04	max. Earth dist.	1046 Dec 13 j 15:21	27° $\mathbb{Z}$ 55'26	11.06115 AU
minimum elong	1040 Oct 06 j 18:13	19° $\mathbb{L}$ 23'06	2°17'04	morning rise	1046 Dec 30 j 12:24	29° $\mathbb{Z}$ 54'04	
max. Earth dist.	1040 Oct 06 j 17:45	19° $\mathbb{L}$ 22'58	10.82760 AU		1046 Dec 31 j 08:59	0° $\mathbb{Z}$	
morning rise	1040 Oct 23 j 12:41	21° $\mathbb{L}$ 23'17		retrograde	1047 Apr 10 j 18:39	6° $\mathbb{Z}$ 56'23	
retrograde	1041 Jan 30 j 22:28	28° $\mathbb{L}$ 29'40		opposition	1047 Jun 20 j 14:11	3° $\mathbb{Z}$ 38'11	0°34'07
opposition	1041 Apr 09 j 16:39	25° $\mathbb{L}$ 11'28	2°45'57	min. Earth dist.	1047 Jun 20 j 20:08	3° $\mathbb{Z}$ 37'05	9.04419 AU
min. Earth dist.	1041 Apr 09 j 17:00	25° $\mathbb{L}$ 11'24	8.87534 AU	direct	1047 Aug 30 j 03:53	0° $\mathbb{Z}$ 19'59	
direct	1041 Jun 19 j 17:31	21° $\mathbb{L}$ 48'24		evening set	1047 Dec 08 j 15:38	7° $\mathbb{Z}$ 20'01	
evening set	1041 Oct 01 j 21:57	29° $\mathbb{L}$ 09'07					
	1041 Oct 09 j 02:55	0° $\mathbb{M}$		conjunction	1047 Dec 25 j 06:27	9° $\mathbb{Z}$ 17'16	0°14'32
conjunction	1041 Oct 18 j 17:35	1° $\mathbb{M}$ 08'38	2°12'19	minimum elong	1047 Dec 25 j 06:27	9° $\mathbb{Z}$ 17'16	0°14'32
minimum elong	1041 Oct 18 j 17:36	1° $\mathbb{M}$ 08'39	2°12'19	behind sun begin	1047 Dec 25 j 03:12	9° $\mathbb{Z}$ 16'19	
max. Earth dist.	1041 Oct 18 j 16:16	1° $\mathbb{M}$ 08'15	10.91624 AU	behind sun end	1047 Dec 25 j 09:42	9° $\mathbb{Z}$ 18'13	
morning rise	1041 Nov 04 j 09:24	3° $\mathbb{M}$ 07'06		max. Earth dist.	1047 Dec 24 j 23:06	9° $\mathbb{Z}$ 15'07	11.02131 AU
retrograde	1042 Feb 11 j 18:30	10° $\mathbb{M}$ 09'11		morning rise	1048 Jan 10 j 22:25	11° $\mathbb{Z}$ 14'52	
opposition	1042 Apr 22 j 00:01	6° $\mathbb{M}$ 51'39	2°36'33	retrograde	1048 Apr 21 j 21:38	18° $\mathbb{Z}$ 21'54	
min. Earth dist.	1042 Apr 22 j 02:00	6° $\mathbb{M}$ 51'17	8.95579 AU	opposition	1048 Jul 01 j 19:16	15° $\mathbb{Z}$ 02'46	0°00'52
direct	1042 Jul 02 j 04:00	3° $\mathbb{M}$ 29'50		min. Earth dist.	1048 Jul 02 j 01:28	15° $\mathbb{Z}$ 01'37	8.99263 AU
evening set	1042 Oct 13 j 17:20	10° $\mathbb{M}$ 44'10		desc. node	1048 Jul 11 j 12:24	14° $\mathbb{Z}$ 19'58	
				direct	1048 Sep 10 j 01:16	11° $\mathbb{Z}$ 44'35	
conjunction	1042 Oct 30 j 10:33	12° $\mathbb{M}$ 42'14	2°02'13	evening set	1048 Dec 19 j 02:28	18° $\mathbb{Z}$ 46'12	
minimum elong	1042 Oct 30 j 10:34	12° $\mathbb{M}$ 42'15	2°02'12				
max. Earth dist.	1042 Oct 30 j 07:21	12° $\mathbb{M}$ 41'17	10.98783 AU	conjunction	1049 Jan 04 j 18:18	20° $\mathbb{Z}$ 44'28	0°-12'-59
morning rise	1042 Nov 16 j 00:47	14° $\mathbb{M}$ 39'28		minimum elong	1049 Jan 04 j 18:17	20° $\mathbb{Z}$ 44'27	0°13'01
	1042 Nov 18 j 23:50	15° $\mathbb{M}$		behind sun begin	1049 Jan 04 j 13:58	20° $\mathbb{Z}$ 43'11	
retrograde	1043 Feb 23 j 12:59	21° $\mathbb{M}$ 38'39		behind sun end	1049 Jan 04 j 22:37	20° $\mathbb{Z}$ 45'44	
opposition	1043 May 04 j 04:42	18° $\mathbb{M}$ 21'32	2°21'01	max. Earth dist.	1049 Jan 04 j 11:33	20° $\mathbb{Z}$ 42'28	10.95890 AU
min. Earth dist.	1043 May 04 j 08:05	18° $\mathbb{M}$ 20'55	9.01762 AU	morning rise	1049 Jan 21 j 11:54	22° $\mathbb{Z}$ 43'19	
direct	1043 Jul 14 j 11:09	15° $\mathbb{M}$ 00'50		retrograde	1049 May 04 j 05:57	29° $\mathbb{Z}$ 56'35	
evening set	1043 Oct 25 j 07:10	22° $\mathbb{M}$ 09'45		opposition	1049 Jul 14 j 03:23	26° $\mathbb{Z}$ 36'17	0°-32'-52
				min. Earth dist.	1049 Jul 14 j 08:49	26° $\mathbb{Z}$ 35'16	8.91978 AU
conjunction	1043 Nov 10 j 22:41	24° $\mathbb{M}$ 06'49	1°47'20	direct	1049 Sep 21 j 22:33	23° $\mathbb{Z}$ 17'54	
minimum elong	1043 Nov 10 j 22:44	24° $\mathbb{M}$ 06'50	1°47'19		1049 Dec 27 j 12:34	0° $\mathbb{Z}$	
max. Earth dist.	1043 Nov 10 j 18:11	24° $\mathbb{M}$ 05'30	11.03969 AU	evening set	1049 Dec 30 j 18:03	0° $\mathbb{Z}$ 22'40	
morning rise	1043 Nov 27 j 12:06	26° $\mathbb{M}$ 03'17					
	1044 Jan 04 j 01:40	0° $\mathbb{Z}$		conjunction	1050 Jan 16 j 11:09	2° $\mathbb{Z}$ 22'16	0°-40'-16
retrograde	1044 Mar 06 j 06:19	3° $\mathbb{Z}$ 01'00		minimum elong	1050 Jan 16 j 11:07	2° $\mathbb{Z}$ 22'16	0°40'18
	1044 May 11 j 16:41	30° $\mathbb{R}$ $\mathbb{M}$		max. Earth dist.	1050 Jan 16 j 04:38	2° $\mathbb{Z}$ 20'19	10.87659 AU
opposition	1044 May 15 j 07:29	29° $\mathbb{M}$ 44'01	2°00'08	morning rise	1050 Feb 02 j 06:42	4° $\mathbb{Z}$ 22'41	
min. Earth dist.	1044 May 15 j 11:13	29° $\mathbb{M}$ 43'19	9.05858 AU	retrograde	1050 May 16 j 20:48	11° $\mathbb{Z}$ 43'30	
direct	1044 Jul 25 j 13:17	26° $\mathbb{M}$ 24'17		opposition	1050 Jul 26 j 15:22	8° $\mathbb{Z}$ 21'52	-1°-5'-53
	1044 Oct 03 j 01:08	0° $\mathbb{Z}$		min. Earth dist.	1050 Jul 26 j 20:25	8° $\mathbb{Z}$ 20'55	8.82895 AU
evening set	1044 Nov 04 j 16:58	3° $\mathbb{Z}$ 28'55		direct	1050 Oct 03 j 22:45	5° $\mathbb{Z}$ 02'59	
				evening set	1051 Jan 11 j 15:45	12° $\mathbb{Z}$ 12'22	



conjunction	1051 Jan 28 j 10:19	14° $\approx$ 13'38	-1°-6'-20	conjunction	1057 Apr 16 j 11:13	1° $\approx$ 52'22	-2°-10'-39
minimum elong	1051 Jan 28 j 10:17	14° $\approx$ 13'37	1°06'21	minimum elong	1057 Apr 16 j 11:15	1° $\approx$ 52'23	2°10'40
max. Earth dist.	1051 Jan 28 j 03:39	14° $\approx$ 11'36	10.77814 AU	max. Earth dist.	1057 Apr 16 j 12:59	1° $\approx$ 52'57	10.12341 AU
	1051 Feb 03 j 19:19	15° $\approx$		morning rise	1057 May 04 j 06:14	4° $\approx$ 09'33	
morning rise	1051 Feb 14 j 08:15	16° $\approx$ 15'56		retrograde	1057 Aug 19 j 08:18	12° $\approx$ 28'55	
retrograde	1051 May 29 j 18:29	23° $\approx$ 45'21		opposition	1057 Oct 26 j 09:30	8° $\approx$ 58'41	-2°-35'-40
opposition	1051 Aug 08 j 08:21	20° $\approx$ 22'15	-1°-36'-48	min. Earth dist.	1057 Oct 26 j 07:15	8° $\approx$ 59'08	8.08829 AU
min. Earth dist.	1051 Aug 08 j 13:10	20° $\approx$ 21'20	8.72420 AU	direct	1057 Dec 31 j 18:53	5° $\approx$ 32'07	
direct	1051 Oct 16 j 02:15	17° $\approx$ 02'37		evening set	1058 Apr 13 j 10:41	13° $\approx$ 35'18	
evening set	1052 Jan 23 j 20:42	24° $\approx$ 17'58			1058 Apr 24 j 09:41	15° $\approx$	
conjunction	1052 Feb 09 j 17:15	26° $\approx$ 21'09	-1°-30'00	conjunction	1058 May 01 j 06:02	15° $\approx$ 53'28	-1°-57'-18
minimum elong	1052 Feb 09 j 17:12	26° $\approx$ 21'09	1°30'00	minimum elong	1058 May 01 j 06:05	15° $\approx$ 53'29	1°57'20
max. Earth dist.	1052 Feb 09 j 11:09	26° $\approx$ 19'17	10.66788 AU	max. Earth dist.	1058 May 01 j 09:33	15° $\approx$ 54'37	10.05629 AU
morning rise	1052 Feb 26 j 17:53	28° $\approx$ 25'36		morning rise	1058 May 19 j 04:58	18° $\approx$ 12'46	
	1052 Mar 11 j 03:26	0° $\approx$		retrograde	1058 Sep 02 j 23:42	26° $\approx$ 34'45	
retrograde	1052 Jun 10 j 22:02	6° $\approx$ 04'27		opposition	1058 Nov 09 j 13:41	23° $\approx$ 04'20	-2°-14'-34
opposition	1052 Aug 20 j 06:39	2° $\approx$ 39'48	-2°-4'-8	min. Earth dist.	1058 Nov 09 j 10:16	23° $\approx$ 05'03	8.03338 AU
min. Earth dist.	1052 Aug 20 j 10:56	2° $\approx$ 38'58	8.61010 AU	direct	1059 Jan 14 j 21:51	19° $\approx$ 36'42	
	1052 Sep 29 j 07:25	30° $\approx$		evening set	1059 Apr 28 j 07:51	27° $\approx$ 45'40	
direct	1052 Oct 27 j 12:36	29° $\approx$ 19'13			1059 May 15 j 14:05	0° $\approx$	
	1052 Nov 24 j 07:18	0° $\approx$		conjunction	1059 May 16 j 07:30	0° $\approx$ 05'42	-1°-36'-45
evening set	1053 Feb 04 j 10:26	6° $\approx$ 41'42		minimum elong	1059 May 16 j 07:34	0° $\approx$ 05'43	1°36'47
conjunction	1053 Feb 21 j 09:35	8° $\approx$ 47'08	-1°-50'-1	max. Earth dist.	1059 May 16 j 12:50	0° $\approx$ 07'26	10.01507 AU
minimum elong	1053 Feb 21 j 09:32	8° $\approx$ 47'07	1°50'01	morning rise	1059 Jun 03 j 09:40	2° $\approx$ 26'31	
max. Earth dist.	1053 Feb 21 j 05:21	8° $\approx$ 45'49	10.55057 AU	retrograde	1059 Sep 17 j 15:18	10° $\approx$ 48'17	
morning rise	1053 Mar 10 j 13:08	10° $\approx$ 53'56		opposition	1059 Nov 23 j 19:27	7° $\approx$ 18'07	-1°-44'-59
retrograde	1053 Jun 24 j 09:58	18° $\approx$ 42'32		min. Earth dist.	1059 Nov 23 j 14:44	7° $\approx$ 19'05	8.00589 AU
opposition	1053 Sep 02 j 10:25	15° $\approx$ 16'21	-2°-26'-18	direct	1060 Jan 29 j 06:36	3° $\approx$ 49'36	
min. Earth dist.	1053 Sep 02 j 13:14	15° $\approx$ 15'48	8.49167 AU	evening set	1060 May 12 j 09:52	12° $\approx$ 02'31	
direct	1053 Nov 09 j 05:18	11° $\approx$ 54'41		conjunction	1060 May 30 j 12:51	14° $\approx$ 23'40	-1°-10'-9
evening set	1054 Feb 17 j 09:46	19° $\approx$ 25'12		minimum elong	1060 May 30 j 12:55	14° $\approx$ 23'41	1°10'10
conjunction	1054 Mar 06 j 12:04	21° $\approx$ 33'05	-2°-5'-8	max. Earth dist.	1060 May 30 j 19:51	14° $\approx$ 25'57	10.00258 AU
minimum elong	1054 Mar 06 j 12:02	21° $\approx$ 33'05	2°05'08	morning rise	1060 Jun 17 j 17:00	16° $\approx$ 45'12	
max. Earth dist.	1054 Mar 06 j 09:48	21° $\approx$ 32'23	10.43155 AU	retrograde	1060 Oct 01 j 04:39	25° $\approx$ 04'01	
morning rise	1054 Mar 23 j 18:53	23° $\approx$ 42'27		opposition	1060 Dec 07 j 01:22	21° $\approx$ 34'29	-1°-8'-49
	1054 May 24 j 05:41	0° $\approx$		min. Earth dist.	1060 Dec 06 j 19:24	21° $\approx$ 35'43	8.00779 AU
retrograde	1054 Jul 08 j 07:21	1° $\approx$ 40'38		direct	1061 Feb 11 j 18:20	18° $\approx$ 05'22	
	1054 Aug 23 j 02:40	30° $\approx$		evening set	1061 May 27 j 13:59	26° $\approx$ 20'08	
opposition	1054 Sep 15 j 20:10	28° $\approx$ 13'02	-2°-41'-46	conjunction	1061 Jun 14 j 18:45	28° $\approx$ 41'29	0°-39'-14
min. Earth dist.	1054 Sep 15 j 21:10	28° $\approx$ 12'50	8.37435 AU	minimum elong	1061 Jun 14 j 18:47	28° $\approx$ 41'30	0°39'16
direct	1054 Nov 22 j 02:50	24° $\approx$ 50'12		max. Earth dist.	1061 Jun 15 j 02:56	28° $\approx$ 44'09	10.01973 AU
	1055 Feb 09 j 23:36	0° $\approx$			1061 Jun 24 j 20:00	0° $\approx$	
evening set	1055 Mar 02 j 19:10	2° $\approx$ 29'15		morning rise	1061 Jul 02 j 23:15	1° $\approx$ 02'47	
conjunction	1055 Mar 20 j 01:05	4° $\approx$ 39'45	-2°-14'-12	retrograde	1061 Oct 15 j 14:09	9° $\approx$ 16'16	
minimum elong	1055 Mar 20 j 01:04	4° $\approx$ 39'45	2°14'13	opposition	1061 Dec 21 j 05:46	5° $\approx$ 47'44	0°-28'-33
max. Earth dist.	1055 Mar 20 j 00:30	4° $\approx$ 39'34	10.31665 AU	min. Earth dist.	1061 Dec 20 j 23:16	5° $\approx$ 49'05	8.03917 AU
morning rise	1055 Apr 06 j 11:38	6° $\approx$ 51'46		direct	1062 Feb 26 j 06:58	2° $\approx$ 18'18	
retrograde	1055 Jul 22 j 10:51	14° $\approx$ 58'44		evening set	1062 Jun 11 j 17:15	10° $\approx$ 32'43	
opposition	1055 Sep 29 j 11:44	11° $\approx$ 29'56	-2°-49'-6	conjunction	1062 Jun 29 j 22:01	12° $\approx$ 53'20	0°-6'-10
min. Earth dist.	1055 Sep 29 j 11:11	11° $\approx$ 30'03	8.26408 AU	minimum elong	1062 Jun 29 j 22:02	12° $\approx$ 53'20	0°06'12
direct	1055 Dec 05 j 08:21	8° $\approx$ 05'51		behind sun begin	1062 Jun 29 j 15:04	12° $\approx$ 51'06	
evening set	1056 Mar 15 j 14:58	15° $\approx$ 53'34		behind sun end	1062 Jun 30 j 04:59	12° $\approx$ 55'34	
conjunction	1056 Apr 02 j 01:03	18° $\approx$ 06'45	-2°-16'-14	max. Earth dist.	1062 Jun 30 j 06:31	12° $\approx$ 56'04	10.06559 AU
minimum elong	1056 Apr 02 j 01:04	18° $\approx$ 06'46	2°16'15	morning rise	1062 Jul 18 j 01:12	15° $\approx$ 13'27	
max. Earth dist.	1056 Apr 02 j 01:34	18° $\approx$ 06'55	10.21197 AU	asc. node	1062 Sep 07 j 13:35	20° $\approx$ 55'34	
morning rise	1056 Apr 19 j 15:47	20° $\approx$ 21'26		retrograde	1062 Oct 29 j 18:20	23° $\approx$ 19'41	
retrograde	1056 Aug 04 j 19:29	28° $\approx$ 35'40		opposition	1063 Jan 04 j 07:17	19° $\approx$ 52'25	0°12'59
opposition	1056 Oct 12 j 08:24	25° $\approx$ 05'57	-2°-47'-15	min. Earth dist.	1063 Jan 04 j 00:59	19° $\approx$ 53'43	8.09818 AU
min. Earth dist.	1056 Oct 12 j 06:57	25° $\approx$ 06'15	8.16684 AU	direct	1063 Mar 12 j 18:27	16° $\approx$ 22'57	
direct	1056 Dec 17 j 22:02	21° $\approx$ 40'36		evening set	1063 Jun 26 j 16:44	24° $\approx$ 34'55	
evening set	1057 Mar 29 j 20:32	29° $\approx$ 36'33		conjunction	1063 Jul 14 j 19:44	26° $\approx$ 53'54	0°26'58
	1057 Apr 01 j 22:18	0° $\approx$					



minimum elong	1063 Jul 14 j 19:43	26° $\mathfrak{E}$ 53'54	0°26'58	conjunction	1069 Oct 01 j 21:55	14° $\mathfrak{A}$ 30'51	2°17'11
max. Earth dist.	1063 Jul 15 j 03:42	26° $\mathfrak{E}$ 56'28	10.13715 AU	minimum elong	1069 Oct 01 j 21:55	14° $\mathfrak{A}$ 30'51	2°17'11
morning rise	1063 Aug 01 j 20:03	29° $\mathfrak{E}$ 12'00		max. Earth dist.	1069 Oct 01 j 20:31	14° $\mathfrak{A}$ 30'26	10.78824 AU
	1063 Aug 08 j 05:58	0° $\mathfrak{Q}$		morning rise	1069 Oct 18 j 17:53	16° $\mathfrak{A}$ 31'57	
retrograde	1063 Nov 12 j 15:41	7° $\mathfrak{Q}$ 09'41		retrograde	1070 Jan 26 j 04:59	23° $\mathfrak{A}$ 40'50	
opposition	1064 Jan 18 j 04:42	3° $\mathfrak{Q}$ 43'51	0°53'03	opposition	1070 Apr 04 j 18:25	20° $\mathfrak{A}$ 22'36	2°47'44
min. Earth dist.	1064 Jan 17 j 23:05	3° $\mathfrak{Q}$ 45'00	8.18092 AU	min. Earth dist.	1070 Apr 04 j 20:13	20° $\mathfrak{A}$ 22'15	8.83691 AU
direct	1064 Mar 26 j 04:46	0° $\mathfrak{Q}$ 14'39		direct	1070 Jun 14 j 15:32	16° $\mathfrak{A}$ 59'12	
evening set	1064 Jul 10 j 09:56	8° $\mathfrak{Q}$ 22'18		evening set	1070 Sep 27 j 04:15	24° $\mathfrak{A}$ 23'19	
conjunction	1064 Jul 28 j 09:34	10° $\mathfrak{Q}$ 38'54	0°57'58	conjunction	1070 Oct 14 j 01:03	26° $\mathfrak{A}$ 23'39	2°14'54
minimum elong	1064 Jul 28 j 09:32	10° $\mathfrak{Q}$ 38'53	0°57'57	minimum elong	1070 Oct 14 j 01:04	26° $\mathfrak{A}$ 23'39	2°14'54
max. Earth dist.	1064 Jul 28 j 16:20	10° $\mathfrak{Q}$ 41'03	10.22970 AU	max. Earth dist.	1070 Oct 13 j 21:48	26° $\mathfrak{A}$ 22'41	10.87880 AU
morning rise	1064 Aug 15 j 05:41	12° $\mathfrak{Q}$ 54'20		morning rise	1070 Oct 30 j 18:07	28° $\mathfrak{A}$ 22'54	
	1064 Sep 01 j 13:10	15° $\mathfrak{Q}$			1070 Nov 13 j 21:51	0° $\mathfrak{M}$	
retrograde	1064 Nov 25 j 03:31	20° $\mathfrak{Q}$ 42'46		retrograde	1071 Feb 07 j 02:21	5° $\mathfrak{M}$ 27'03	
opposition	1065 Jan 30 j 20:58	17° $\mathfrak{Q}$ 18'26	1°29'14	opposition	1071 Apr 17 j 03:35	2° $\mathfrak{M}$ 09'25	2°41'13
min. Earth dist.	1065 Jan 30 j 16:06	17° $\mathfrak{Q}$ 19'25	8.28209 AU	min. Earth dist.	1071 Apr 17 j 06:08	2° $\mathfrak{M}$ 08'56	8.91972 AU
	1065 Mar 03 j 06:29	15° $\mathfrak{R}$ $\mathfrak{Q}$			1071 May 18 j 09:30	30° $\mathfrak{R}$ $\mathfrak{A}$	
direct	1065 Apr 09 j 11:33	13° $\mathfrak{Q}$ 49'47		direct	1071 Jun 27 j 06:51	28° $\mathfrak{A}$ 47'07	
	1065 May 16 j 11:07	15° $\mathfrak{Q}$			1071 Aug 05 j 10:52	0° $\mathfrak{M}$	
evening set	1065 Jul 24 j 18:31	21° $\mathfrak{Q}$ 51'31		evening set	1071 Oct 09 j 03:04	6° $\mathfrak{M}$ 04'38	
conjunction	1065 Aug 11 j 13:44	24° $\mathfrak{Q}$ 05'14	1°25'08	conjunction	1071 Oct 25 j 21:19	8° $\mathfrak{M}$ 03'23	2°07'01
minimum elong	1065 Aug 11 j 13:41	24° $\mathfrak{Q}$ 05'13	1°25'08	minimum elong	1071 Oct 25 j 21:21	8° $\mathfrak{M}$ 03'23	2°07'01
max. Earth dist.	1065 Aug 11 j 19:03	24° $\mathfrak{Q}$ 06'54	10.33749 AU	max. Earth dist.	1071 Oct 25 j 17:27	8° $\mathfrak{M}$ 02'14	10.95319 AU
morning rise	1065 Aug 29 j 04:49	26° $\mathfrak{Q}$ 17'37		morning rise	1071 Nov 11 j 12:14	10° $\mathfrak{M}$ 01'12	
	1065 Sep 30 j 10:33	0° $\mathfrak{M}$			1071 Dec 30 j 22:40	15° $\mathfrak{M}$	
retrograde	1065 Dec 08 j 07:16	3° $\mathfrak{M}$ 56'43		retrograde	1072 Feb 18 j 23:26	17° $\mathfrak{M}$ 01'58	
opposition	1066 Feb 13 j 07:35	0° $\mathfrak{M}$ 33'50	1°59'41		1072 Apr 11 j 02:46	15° $\mathfrak{R}$ $\mathfrak{M}$	
min. Earth dist.	1066 Feb 13 j 03:07	0° $\mathfrak{M}$ 34'44	8.39541 AU	opposition	1072 Apr 28 j 09:49	13° $\mathfrak{M}$ 44'40	2°28'14
	1066 Feb 20 j 10:16	30° $\mathfrak{R}$ $\mathfrak{Q}$		min. Earth dist.	1072 Apr 28 j 12:52	13° $\mathfrak{M}$ 44'06	8.98480 AU
direct	1066 Apr 23 j 12:29	27° $\mathfrak{Q}$ 05'59		direct	1072 Jul 08 j 16:35	10° $\mathfrak{M}$ 23'24	
	1066 Jun 22 j 15:11	0° $\mathfrak{M}$			1072 Sep 26 j 09:20	15° $\mathfrak{M}$	
evening set	1066 Aug 07 j 16:54	5° $\mathfrak{M}$ 00'35		evening set	1072 Oct 19 j 19:28	17° $\mathfrak{M}$ 35'04	
conjunction	1066 Aug 25 j 07:14	7° $\mathfrak{M}$ 11'14	1°47'14	conjunction	1072 Nov 05 j 11:52	19° $\mathfrak{M}$ 32'41	1°54'06
minimum elong	1066 Aug 25 j 07:11	7° $\mathfrak{M}$ 11'13	1°47'14	minimum elong	1072 Nov 05 j 11:54	19° $\mathfrak{M}$ 32'42	1°54'06
max. Earth dist.	1066 Aug 25 j 11:27	7° $\mathfrak{M}$ 12'33	10.45390 AU	max. Earth dist.	1072 Nov 05 j 07:39	19° $\mathfrak{M}$ 31'26	11.00878 AU
morning rise	1066 Sep 11 j 16:57	9° $\mathfrak{M}$ 20'27		morning rise	1072 Nov 22 j 01:30	21° $\mathfrak{M}$ 29'34	
retrograde	1066 Dec 21 j 04:44	16° $\mathfrak{M}$ 50'34		retrograde	1073 Mar 01 j 18:12	28° $\mathfrak{M}$ 28'19	
opposition	1067 Feb 26 j 12:15	13° $\mathfrak{M}$ 29'03	2°23'10	opposition	1073 May 10 j 13:51	25° $\mathfrak{M}$ 11'05	2°09'32
min. Earth dist.	1067 Feb 26 j 08:39	13° $\mathfrak{M}$ 29'45	8.51380 AU	min. Earth dist.	1073 May 10 j 18:09	25° $\mathfrak{M}$ 10'17	9.03002 AU
direct	1067 May 07 j 05:32	10° $\mathfrak{M}$ 02'10		direct	1073 Jul 20 j 19:34	21° $\mathfrak{M}$ 50'40	
evening set	1067 Aug 21 j 04:49	17° $\mathfrak{M}$ 49'02		evening set	1073 Oct 31 j 07:16	28° $\mathfrak{M}$ 57'37	
					1073 Nov 09 j 05:17	0° $\mathfrak{A}$	
conjunction	1067 Sep 07 j 14:09	19° $\mathfrak{M}$ 56'40	2°03'28	conjunction	1073 Nov 16 j 22:22	0° $\mathfrak{A}$ 54'31	1°36'47
minimum elong	1067 Sep 07 j 14:07	19° $\mathfrak{M}$ 56'39	2°03'28	minimum elong	1073 Nov 16 j 22:24	0° $\mathfrak{A}$ 54'32	1°36'47
max. Earth dist.	1067 Sep 07 j 17:02	19° $\mathfrak{M}$ 57'33	10.57176 AU	max. Earth dist.	1073 Nov 16 j 16:40	0° $\mathfrak{A}$ 52'50	11.04376 AU
morning rise	1067 Sep 24 j 18:34	22° $\mathfrak{M}$ 02'49		morning rise	1073 Dec 03 j 11:39	2° $\mathfrak{A}$ 50'56	
retrograde	1068 Jan 02 j 18:45	29° $\mathfrak{M}$ 24'43		retrograde	1074 Mar 13 j 11:07	9° $\mathfrak{A}$ 49'05	
opposition	1068 Mar 10 j 11:11	26° $\mathfrak{M}$ 04'29	2°39'02	opposition	1074 May 22 j 16:17	6° $\mathfrak{A}$ 31'41	1°45'56
min. Earth dist.	1068 Mar 10 j 09:16	26° $\mathfrak{M}$ 04'51	8.63025 AU	min. Earth dist.	1074 May 22 j 21:49	6° $\mathfrak{A}$ 30'39	9.05394 AU
direct	1068 May 19 j 15:22	22° $\mathfrak{M}$ 38'43		direct	1074 Aug 01 j 20:31	3° $\mathfrak{A}$ 11'55	
	1068 Aug 30 j 18:32	0° $\mathfrak{A}$		evening set	1074 Nov 11 j 15:57	10° $\mathfrak{A}$ 15'25	
evening set	1068 Sep 02 j 06:15	0° $\mathfrak{A}$ 17'45					
conjunction	1068 Sep 19 j 10:48	2° $\mathfrak{A}$ 22'34	2°13'27	conjunction	1074 Nov 28 j 06:24	12° $\mathfrak{A}$ 12'02	1°15'47
minimum elong	1068 Sep 19 j 10:47	2° $\mathfrak{A}$ 22'34	2°13'27	minimum elong	1074 Nov 28 j 06:26	12° $\mathfrak{A}$ 12'03	1°15'47
max. Earth dist.	1068 Sep 19 j 11:52	2° $\mathfrak{A}$ 22'54	10.68471 AU	max. Earth dist.	1074 Nov 27 j 23:37	12° $\mathfrak{A}$ 10'02	11.05702 AU
morning rise	1068 Oct 06 j 10:31	4° $\mathfrak{A}$ 26'00		morning rise	1074 Dec 14 j 19:59	14° $\mathfrak{A}$ 08'23	
retrograde	1069 Jan 14 j 02:21	11° $\mathfrak{A}$ 40'48		retrograde	1075 Mar 25 j 06:05	21° $\mathfrak{A}$ 07'30	
opposition	1069 Mar 23 j 05:07	8° $\mathfrak{A}$ 21'41	2°47'10	opposition	1075 Jun 03 j 18:23	17° $\mathfrak{A}$ 49'40	1°18'20
min. Earth dist.	1069 Mar 23 j 05:23	8° $\mathfrak{A}$ 21'38	8.73928 AU	min. Earth dist.	1075 Jun 04 j 00:10	17° $\mathfrak{A}$ 48'36	9.05577 AU
direct	1069 Jun 01 j 18:55	4° $\mathfrak{A}$ 57'06		direct	1075 Aug 13 j 19:12	14° $\mathfrak{A}$ 30'25	
evening set	1069 Sep 14 j 21:38	12° $\mathfrak{A}$ 28'28		evening set	1075 Nov 22 j 23:08	21° $\mathfrak{A}$ 31'48	



conjunction	1075 Dec 09 j 13:35	23° $\mathcal{A}$ 28'31	0°51'51	opposition	1081 Aug 15 j 06:28	27° $\approx$ 47'38	-1°-53'-19
minimum elong	1075 Dec 09 j 13:36	23° $\mathcal{A}$ 28'32	0°51'51	min. Earth dist.	1081 Aug 15 j 08:57	27° $\approx$ 47'09	8.65278 AU
max. Earth dist.	1075 Dec 09 j 07:16	23° $\mathcal{A}$ 26'39	11.04805 AU	direct	1081 Oct 22 j 17:29	24° $\approx$ 27'27	
morning rise	1075 Dec 26 j 03:48	25° $\mathcal{A}$ 25'14			1082 Jan 15 j 09:17	0° $\mathcal{H}$	
	1076 Feb 09 j 01:20	0° $\mathcal{B}$		evening set	1082 Jan 30 j 13:41	1° $\mathcal{H}$ 47'08	
retrograde	1076 Apr 05 j 03:18	2° $\mathcal{B}$ 26'53					
	1076 Jun 03 j 01:59	30° $\mathcal{R}$ $\mathcal{A}$		conjunction	1082 Feb 16 j 11:40	3° $\mathcal{H}$ 51'40	-1°-42'-12
opposition	1076 Jun 14 j 21:08	29° $\mathcal{A}$ 08'22	0°47'39	minimum elong	1082 Feb 16 j 11:38	3° $\mathcal{H}$ 51'39	1°42'12
min. Earth dist.	1076 Jun 15 j 02:16	29° $\mathcal{A}$ 07'25	9.03545 AU	max. Earth dist.	1082 Feb 16 j 08:20	3° $\mathcal{H}$ 50'38	10.59696 AU
direct	1076 Aug 24 j 15:31	25° $\mathcal{A}$ 49'29		morning rise	1082 Mar 05 j 13:50	5° $\mathcal{H}$ 57'30	
	1076 Nov 07 j 08:29	0° $\mathcal{B}$		retrograde	1082 Jun 19 j 05:23	13° $\mathcal{H}$ 42'14	
evening set	1076 Dec 03 j 06:49	2° $\mathcal{B}$ 50'12		opposition	1082 Aug 28 j 08:14	10° $\mathcal{H}$ 16'46	-2°-17'-46
				min. Earth dist.	1082 Aug 28 j 09:54	10° $\mathcal{H}$ 16'26	8.54114 AU
conjunction	1076 Dec 19 j 21:40	4° $\mathcal{B}$ 47'24	0°25'48	direct	1082 Nov 04 j 06:36	6° $\mathcal{H}$ 55'45	
minimum elong	1076 Dec 19 j 21:41	4° $\mathcal{B}$ 47'25	0°25'49	evening set	1083 Feb 12 j 09:16	14° $\mathcal{H}$ 22'59	
max. Earth dist.	1076 Dec 19 j 15:36	4° $\mathcal{B}$ 45'37	11.01716 AU				
morning rise	1077 Jan 05 j 12:59	6° $\mathcal{B}$ 44'50		conjunction	1083 Mar 01 j 09:57	16° $\mathcal{H}$ 29'48	-1°-59'-28
retrograde	1077 Apr 17 j 06:00	13° $\mathcal{B}$ 50'31		minimum elong	1083 Mar 01 j 09:55	16° $\mathcal{H}$ 29'47	1°59'28
opposition	1077 Jun 27 j 01:28	10° $\mathcal{B}$ 31'11	0°14'53	max. Earth dist.	1083 Mar 01 j 07:26	16° $\mathcal{H}$ 29'01	10.48377 AU
min. Earth dist.	1077 Jun 27 j 06:37	10° $\mathcal{B}$ 30'13	8.99372 AU	morning rise	1083 Mar 18 j 15:23	18° $\mathcal{H}$ 38'04	
direct	1077 Sep 05 j 11:33	7° $\mathcal{B}$ 12'26		retrograde	1083 Jul 02 j 23:09	26° $\mathcal{H}$ 32'20	
desc. node	1077 Dec 11 j 03:59	13° $\mathcal{B}$ 49'30		opposition	1083 Sep 10 j 16:00	23° $\mathcal{H}$ 05'37	-2°-36'-7
evening set	1077 Dec 14 j 16:41	14° $\mathcal{B}$ 14'01		min. Earth dist.	1083 Sep 10 j 17:00	23° $\mathcal{H}$ 05'25	8.42847 AU
				direct	1083 Nov 17 j 02:04	19° $\mathcal{H}$ 43'38	
conjunction	1077 Dec 31 j 08:10	16° $\mathcal{B}$ 12'04	0°-1'-30	evening set	1084 Feb 25 j 14:38	27° $\mathcal{H}$ 19'02	
minimum elong	1077 Dec 31 j 08:09	16° $\mathcal{B}$ 12'04	0°01'32				
behind sun begin	1077 Dec 31 j 01:10	16° $\mathcal{B}$ 10'00		conjunction	1084 Mar 13 j 18:47	29° $\mathcal{H}$ 28'20	-2°-11'-7
behind sun end	1077 Dec 31 j 15:09	16° $\mathcal{B}$ 14'07		minimum elong	1084 Mar 13 j 18:46	29° $\mathcal{H}$ 28'20	2°11'08
max. Earth dist.	1077 Dec 31 j 01:27	16° $\mathcal{B}$ 10'06	10.96538 AU	max. Earth dist.	1084 Mar 13 j 18:00	29° $\mathcal{H}$ 28'05	10.37229 AU
morning rise	1078 Jan 17 j 01:09	18° $\mathcal{B}$ 10'35			1084 Mar 17 j 23:01	0° $\mathcal{Y}$	
retrograde	1078 Apr 29 j 10:53	25° $\mathcal{B}$ 21'46		morning rise	1084 Mar 31 j 03:49	1° $\mathcal{Y}$ 39'10	
opposition	1078 Jul 09 j 08:32	22° $\mathcal{B}$ 01'25	0°-18'-50	retrograde	1084 Jul 15 j 23:02	9° $\mathcal{Y}$ 42'23	
min. Earth dist.	1078 Jul 09 j 14:04	22° $\mathcal{B}$ 00'23	8.93196 AU	opposition	1084 Sep 23 j 05:27	6° $\mathcal{Y}$ 14'32	-2°-46'-54
direct	1078 Sep 17 j 07:16	18° $\mathcal{B}$ 42'36		min. Earth dist.	1084 Sep 23 j 05:18	6° $\mathcal{Y}$ 14'33	8.32024 AU
evening set	1078 Dec 26 j 06:19	25° $\mathcal{B}$ 46'36		direct	1084 Nov 29 j 05:51	2° $\mathcal{Y}$ 51'27	
				evening set	1085 Mar 10 j 06:20	10° $\mathcal{Y}$ 35'16	
conjunction	1079 Jan 11 j 22:46	27° $\mathcal{B}$ 45'48	0°-29'00				
minimum elong	1079 Jan 11 j 22:45	27° $\mathcal{B}$ 45'48	0°29'02	conjunction	1085 Mar 27 j 14:34	12° $\mathcal{Y}$ 47'10	-2°-16'-8
max. Earth dist.	1079 Jan 11 j 16:02	27° $\mathcal{B}$ 43'47	10.89444 AU	minimum elong	1085 Mar 27 j 14:34	12° $\mathcal{Y}$ 47'11	2°16'08
morning rise	1079 Jan 28 j 17:40	29° $\mathcal{B}$ 45'44		max. Earth dist.	1085 Mar 27 j 15:52	12° $\mathcal{Y}$ 47'35	10.26804 AU
	1079 Jan 30 j 18:26	0° $\approx$		morning rise	1085 Apr 14 j 03:27	15° $\mathcal{Y}$ 00'35	
retrograde	1079 May 11 j 21:43	7° $\approx$ 03'50		retrograde	1085 Jul 30 j 04:52	23° $\mathcal{Y}$ 11'28	
opposition	1079 Jul 21 j 19:11	3° $\approx$ 42'19	0°-52'-21	opposition	1085 Oct 06 j 23:59	19° $\mathcal{Y}$ 42'40	-2°-48'-53
min. Earth dist.	1079 Jul 22 j 00:23	3° $\approx$ 41'21	8.85238 AU	min. Earth dist.	1085 Oct 06 j 22:23	19° $\mathcal{Y}$ 43'00	8.22184 AU
direct	1079 Sep 29 j 07:43	0° $\approx$ 23'14		direct	1085 Dec 12 j 17:01	16° $\mathcal{Y}$ 18'27	
evening set	1080 Jan 07 j 01:21	7° $\approx$ 31'07		evening set	1086 Mar 24 j 07:49	24° $\mathcal{Y}$ 10'24	
conjunction	1080 Jan 23 j 19:20	9° $\approx$ 31'49	0°-55'-44	conjunction	1086 Apr 10 j 20:33	26° $\mathcal{Y}$ 24'54	-2°-13'-42
minimum elong	1080 Jan 23 j 19:18	9° $\approx$ 31'48	0°55'45	minimum elong	1086 Apr 10 j 20:34	26° $\mathcal{Y}$ 24'55	2°13'43
max. Earth dist.	1080 Jan 23 j 13:58	9° $\approx$ 30'12	10.80697 AU	max. Earth dist.	1086 Apr 10 j 23:44	26° $\mathcal{Y}$ 25'56	10.17631 AU
morning rise	1080 Feb 09 j 16:18	11° $\approx$ 33'27		morning rise	1086 Apr 28 j 13:30	28° $\mathcal{Y}$ 40'48	
	1080 Mar 11 j 20:15	15° $\approx$			1086 May 09 j 04:48	0° $\mathcal{B}$	
retrograde	1080 May 23 j 17:30	18° $\approx$ 59'40		retrograde	1086 Aug 13 j 16:29	6° $\mathcal{B}$ 57'31	
opposition	1080 Aug 02 j 10:16	15° $\approx$ 36'51	-1°-24'-19	opposition	1086 Oct 20 j 23:08	3° $\mathcal{B}$ 28'03	-2°-41'-19
min. Earth dist.	1080 Aug 02 j 14:07	15° $\approx$ 36'07	8.75807 AU	min. Earth dist.	1086 Oct 20 j 20:05	3° $\mathcal{B}$ 28'41	8.13812 AU
	1080 Aug 10 j 13:56	15° $\mathcal{R}$ $\approx$		direct	1086 Dec 26 j 10:06	0° $\mathcal{B}$ 02'39	
direct	1080 Oct 10 j 10:49	12° $\approx$ 17'19		evening set	1087 Apr 07 j 18:08	8° $\mathcal{B}$ 02'01	
	1080 Dec 06 j 22:18	15° $\approx$					
evening set	1081 Jan 18 j 03:19	19° $\approx$ 30'28		conjunction	1087 Apr 25 j 11:31	10° $\mathcal{B}$ 18'59	-2°-3'-33
				minimum elong	1087 Apr 25 j 11:34	10° $\mathcal{B}$ 19'00	2°03'34
conjunction	1081 Feb 03 j 23:10	21° $\approx$ 32'56	-1°-20'-32	max. Earth dist.	1087 Apr 25 j 15:41	10° $\mathcal{B}$ 20'20	10.10167 AU
minimum elong	1081 Feb 03 j 23:07	21° $\approx$ 32'56	1°20'33	morning rise	1087 May 13 j 08:34	12° $\mathcal{B}$ 37'09	
max. Earth dist.	1081 Feb 03 j 19:12	21° $\approx$ 31'44	10.70639 AU		1087 Jun 01 j 17:47	15° $\mathcal{B}$	
morning rise	1081 Feb 20 j 22:31	23° $\approx$ 36'33		retrograde	1087 Aug 28 j 07:48	20° $\mathcal{B}$ 57'29	
	1081 Apr 28 j 09:56	0° $\mathcal{H}$		opposition	1087 Nov 04 j 01:51	17° $\mathcal{B}$ 27'42	-2°-24'-5
retrograde	1081 Jun 05 j 19:35	1° $\mathcal{H}$ 11'47		min. Earth dist.	1087 Nov 03 j 22:07	17° $\mathcal{B}$ 28'28	8.07340 AU
	1081 Jul 14 j 20:00	30° $\mathcal{R}$ $\approx$			1087 Dec 07 j 13:32	15° $\mathcal{R}$ $\mathcal{B}$	



direct	1088 Jan 09 j 09:13	14°♄01'09		minimum elong	1093 Jul 22 j 16:30	5°♄08'42	0°45'20
	1088 Feb 10 j 23:03	15°♄		max. Earth dist.	1093 Jul 22 j 23:16	5°♄10'52	10.19042 AU
evening set	1088 Apr 21 j 12:22	22°♄06'58		morning rise	1093 Aug 09 j 14:32	7°♄25'16	
					1093 Nov 02 j 05:12	15°♄	
conjunction	1088 May 09 j 10:11	24°♄26'01	-1°-45'-54	retrograde	1093 Nov 19 j 20:24	15°♄17'22	
minimum elong	1088 May 09 j 10:14	24°♄26'02	1°45'55		1093 Dec 07 j 13:06	15°♄	
max. Earth dist.	1088 May 09 j 14:53	24°♄27'33	10.04852 AU	opposition	1094 Jan 25 j 12:31	11°♄52'10	1°14'39
morning rise	1088 May 27 j 10:52	26°♄46'00		min. Earth dist.	1094 Jan 25 j 07:08	11°♄53'15	8.23737 AU
	1088 Jun 23 j 02:36	0°♄		direct	1094 Apr 03 j 21:55	8°♄23'03	
retrograde	1088 Sep 11 j 00:04	5°♄07'21			1094 Jul 07 j 04:48	15°♄	
opposition	1088 Nov 17 j 06:43	1°♄37'38	-1°-57'-54	evening set	1094 Jul 19 j 02:59	16°♄27'02	
min. Earth dist.	1088 Nov 17 j 02:40	1°♄38'28	8.03238 AU				
	1088 Dec 07 j 19:47	30°♄		conjunction	1094 Aug 06 j 00:23	18°♄42'00	1°14'15
direct	1089 Jan 22 j 15:25	28°♄10'03		minimum elong	1094 Aug 06 j 00:20	18°♄41'59	1°14'14
	1089 Mar 08 j 17:17	0°♄		max. Earth dist.	1094 Aug 06 j 06:35	18°♄43'58	10.28831 AU
evening set	1089 May 06 j 12:21	6°♄20'45		morning rise	1094 Aug 23 j 17:35	20°♄55'41	
				retrograde	1094 Dec 03 j 03:53	28°♄38'33	
conjunction	1089 May 24 j 13:51	8°♄41'16	-1°-21'-40	opposition	1095 Feb 08 j 00:57	25°♄14'43	1°47'38
minimum elong	1089 May 24 j 13:54	8°♄41'17	1°21'41	min. Earth dist.	1095 Feb 07 j 20:44	25°♄15'34	8.34229 AU
max. Earth dist.	1089 May 24 j 19:05	8°♄42'58	10.02133 AU	direct	1095 Apr 17 j 23:45	21°♄46'08	
morning rise	1089 Jun 11 j 17:12	11°♄02'22		evening set	1095 Aug 02 j 05:26	29°♄43'40	
retrograde	1089 Sep 25 j 13:50	19°♄22'00			1095 Aug 04 j 10:36	0°♄	
opposition	1089 Dec 01 j 12:32	15°♄52'42	-1°-24'-17				
min. Earth dist.	1089 Dec 01 j 08:12	15°♄53'36	8.01891 AU	conjunction	1095 Aug 19 j 22:02	1°♄55'40	1°38'35
direct	1090 Feb 06 j 02:12	12°♄24'16		minimum elong	1095 Aug 19 j 21:59	1°♄55'39	1°38'35
evening set	1090 May 21 j 15:23	20°♄37'48		max. Earth dist.	1095 Aug 20 j 02:43	1°♄57'08	10.39814 AU
				morning rise	1095 Sep 06 j 10:00	4°♄06'15	
conjunction	1090 Jun 08 j 19:19	22°♄58'58	0°-52'-22	retrograde	1095 Dec 16 j 03:55	11°♄40'02	
minimum elong	1090 Jun 08 j 19:22	22°♄58'58	0°52'24	opposition	1096 Feb 21 j 07:45	8°♄17'33	2°14'09
max. Earth dist.	1090 Jun 09 j 01:05	23°♄00'50	10.02281 AU	min. Earth dist.	1096 Feb 21 j 04:56	8°♄18'06	8.45623 AU
morning rise	1090 Jun 26 j 23:53	25°♄20'16		direct	1096 Apr 30 j 19:17	4°♄49'46	
	1090 Aug 05 j 23:42	0°♄		evening set	1096 Aug 14 j 21:30	12°♄39'56	
retrograde	1090 Oct 10 j 00:00	3°♄35'40					
opposition	1090 Dec 15 j 17:29	0°♄07'03	0°-45'-30	conjunction	1096 Sep 01 j 08:54	14°♄48'53	1°57'20
min. Earth dist.	1090 Dec 15 j 12:46	0°♄08'02	8.03457 AU	minimum elong	1096 Sep 01 j 08:52	14°♄48'52	1°57'20
	1090 Dec 17 j 03:36	30°♄		max. Earth dist.	1096 Sep 01 j 11:34	14°♄49'42	10.51387 AU
direct	1091 Feb 20 j 15:00	26°♄38'01		morning rise	1096 Sep 18 j 15:39	16°♄56'22	
	1091 Apr 24 j 12:32	0°♄		retrograde	1096 Dec 27 j 19:07	24°♄21'38	
evening set	1091 Jun 05 j 18:53	4°♄52'12		opposition	1097 Mar 05 j 08:47	21°♄00'26	2°33'17
				min. Earth dist.	1097 Mar 05 j 06:51	21°♄00'48	8.57312 AU
conjunction	1091 Jun 23 j 23:42	7°♄13'04	0°-19'-59	direct	1097 May 14 j 08:56	17°♄33'40	
minimum elong	1091 Jun 23 j 23:43	7°♄13'04	0°20'01	evening set	1097 Aug 28 j 02:53	25°♄16'01	
max. Earth dist.	1091 Jun 24 j 05:58	7°♄15'06	10.05318 AU				
morning rise	1091 Jul 12 j 03:46	9°♄33'39		conjunction	1097 Sep 14 j 09:22	27°♄22'01	2°09'59
retrograde	1091 Oct 24 j 05:22	17°♄42'35		minimum elong	1097 Sep 14 j 09:21	27°♄22'01	2°10'00
opposition	1091 Dec 29 j 19:49	14°♄14'57	0°-4'-15	max. Earth dist.	1097 Sep 14 j 10:35	27°♄22'23	10.62975 AU
min. Earth dist.	1091 Dec 29 j 14:33	14°♄16'02	8.07847 AU	morning rise	1097 Oct 01 j 11:15	29°♄26'38	
asc. node	1092 Feb 06 j 19:45	11°♄28'50			1097 Oct 06 j 03:23	0°♄	
direct	1092 Mar 06 j 03:33	10°♄45'34		retrograde	1098 Jan 09 j 04:06	6°♄44'14	
evening set	1092 Jun 19 j 19:50	18°♄58'16		opposition	1098 Mar 18 j 04:12	3°♄24'11	2°44'41
				min. Earth dist.	1098 Mar 18 j 02:46	3°♄24'28	8.68732 AU
conjunction	1092 Jul 07 j 23:45	21°♄17'54	0°13'20		1098 May 22 j 09:42	30°♄	
minimum elong	1092 Jul 07 j 23:44	21°♄17'54	0°13'19	direct	1098 May 27 j 16:09	29°♄58'37	
behind sun begin	1092 Jul 07 j 19:40	21°♄16'36			1098 Jun 01 j 21:39	0°♄	
behind sun end	1092 Jul 08 j 03:48	21°♄19'12		evening set	1098 Sep 09 j 21:55	7°♄33'02	
max. Earth dist.	1092 Jul 08 j 06:24	21°♄20'02	10.11035 AU				
morning rise	1092 Jul 26 j 01:32	23°♄36'51		conjunction	1098 Sep 27 j 00:04	9°♄36'25	2°16'22
	1092 Sep 24 j 15:26	0°♄		minimum elong	1098 Sep 27 j 00:03	9°♄36'25	2°16'22
retrograde	1092 Nov 06 j 05:00	1°♄37'49		max. Earth dist.	1098 Sep 27 j 00:32	9°♄36'34	10.74037 AU
	1092 Dec 19 j 10:43	30°♄		morning rise	1098 Oct 13 j 21:40	11°♄38'28	
opposition	1093 Jan 11 j 18:33	28°♄11'20	0°36'39	retrograde	1099 Jan 21 j 09:21	18°♄49'28	
min. Earth dist.	1093 Jan 11 j 12:57	28°♄12'28	8.14758 AU	opposition	1099 Mar 30 j 18:42	15°♄30'26	2°48'26
direct	1093 Mar 20 j 14:21	24°♄41'55		min. Earth dist.	1099 Mar 30 j 18:10	15°♄30'32	8.79357 AU
	1093 Jun 10 j 20:04	0°♄		direct	1099 Jun 09 j 14:23	12°♄06'10	
evening set	1093 Jul 04 j 15:14	2°♄51'06		evening set	1099 Sep 22 j 07:36	19°♄32'56	
conjunction	1093 Jul 22 j 16:33	5°♄08'42	0°45'21	conjunction	1099 Oct 09 j 06:01	21°♄34'04	2°16'37



minimum elong	1099 Oct 09 j 06:01	21° $\Omega$ 34'04	2°16'37
max. Earth dist.	1099 Oct 09 j 05:38	21° $\Omega$ 33'57	10.84081 AU
morning rise	1099 Oct 26 j 00:07	23° $\Omega$ 33'59	
	1100 Jan 05 j 14:05	0° $\mathcal{M}$	
retrograde	1100 Feb 02 j 08:49	0° $\mathcal{M}$ 39'33	
	1100 Mar 01 j 13:17	30° $\mathcal{R}$ $\Omega$	
opposition	1100 Apr 11 j 05:00	27° $\Omega$ 21'23	2°44'52
min. Earth dist.	1100 Apr 11 j 06:06	27° $\Omega$ 21'11	8.88744 AU
direct	1100 Jun 21 j 05:41	23° $\Omega$ 58'24	
	1100 Sep 21 j 23:48	0° $\mathcal{M}$	
evening set	1100 Oct 03 j 09:05	1° $\mathcal{M}$ 18'08	
conjunction	1100 Oct 20 j 04:21	3° $\mathcal{M}$ 17'25	2°11'05
minimum elong	1100 Oct 20 j 04:22	3° $\mathcal{M}$ 17'25	2°11'05
max. Earth dist.	1100 Oct 20 j 02:09	3° $\mathcal{M}$ 16'46	10.92711 AU
morning rise	1100 Nov 05 j 20:02	5° $\mathcal{M}$ 15'42	



	1100 Jan 05 j 14:05	0°♄		minimum elong	1105 Dec 15 j 06:53	0°♄02'18	0°37'27
retrograde	1100 Feb 02 j 08:49	0°♄39'33		max. Earth dist.	1105 Dec 15 j 00:00	0°♄00'16	11.05758 AU
	1100 Mar 01 j 13:17	30°♄		morning rise	1105 Dec 31 j 21:41	1°♄59'06	
opposition	1100 Apr 11 j 05:00	27°♄21'23	2°44'52	retrograde	1106 Apr 12 j 05:41	9°♄01'52	
min. Earth dist.	1100 Apr 11 j 06:06	27°♄21'11	8.88744 AU	opposition	1106 Jun 22 j 01:06	5°♄43'35	0°29'29
direct	1100 Jun 21 j 05:41	23°♄58'24		min. Earth dist.	1106 Jun 22 j 07:03	5°♄42'29	9.03946 AU
	1100 Sep 21 j 23:48	0°♄		direct	1106 Aug 31 j 15:17	2°♄25'24	
evening set	1100 Oct 03 j 09:05	1°♄18'08		evening set	1106 Dec 10 j 00:49	9°♄25'35	
conjunction	1100 Oct 20 j 04:21	3°♄17'25	2°11'05	conjunction	1106 Dec 26 j 15:50	11°♄22'56	0°10'41
minimum elong	1100 Oct 20 j 04:22	3°♄17'25	2°11'05	minimum elong	1106 Dec 26 j 15:51	11°♄22'57	0°10'41
max. Earth dist.	1100 Oct 20 j 02:09	3°♄16'46	10.92711 AU	behind sun begin	1106 Dec 26 j 10:25	11°♄21'21	
morning rise	1100 Nov 05 j 20:02	5°♄15'42		behind sun end	1106 Dec 26 j 21:16	11°♄24'32	
retrograde	1101 Feb 13 j 04:50	12°♄17'09		max. Earth dist.	1106 Dec 26 j 09:07	11°♄20'58	11.01558 AU
opposition	1101 Apr 23 j 11:52	8°♄59'38	2°34'34	morning rise	1107 Jan 12 j 07:56	13°♄20'40	
min. Earth dist.	1101 Apr 23 j 14:30	8°♄59'09	8.96535 AU	retrograde	1107 Apr 24 j 08:52	20°♄28'17	
direct	1101 Jul 03 j 17:05	5°♄37'52		desc. node	1107 May 21 j 23:52	19°♄52'24	
evening set	1101 Oct 15 j 03:28	12°♄51'20		opposition	1107 Jul 04 j 06:25	17°♄09'03	0°-3'-51
conjunction	1101 Oct 31 j 20:27	14°♄49'15	2°00'16	min. Earth dist.	1107 Jul 04 j 12:03	17°♄08'00	8.98590 AU
minimum elong	1101 Oct 31 j 20:29	14°♄49'16	2°00'16	direct	1107 Sep 12 j 11:02	13°♄50'54	
max. Earth dist.	1101 Oct 31 j 16:33	14°♄48'06	10.99602 AU	evening set	1107 Dec 21 j 12:08	20°♄52'49	
	1101 Nov 02 j 08:45	15°♄		conjunction	1108 Jan 07 j 04:07	22°♄51'13	0°-16'-50
morning rise	1101 Nov 17 j 10:41	16°♄46'21		minimum elong	1108 Jan 07 j 04:06	22°♄51'12	0°16'51
retrograde	1102 Feb 24 j 22:41	23°♄45'07		max. Earth dist.	1108 Jan 06 j 21:36	22°♄49'17	10.95118 AU
opposition	1102 May 05 j 15:59	20°♄27'58	2°18'15	morning rise	1108 Jan 23 j 21:49	24°♄50'12	
min. Earth dist.	1102 May 05 j 19:15	20°♄27'21	9.02432 AU		1108 Mar 15 j 06:36	0°≈	
direct	1102 Jul 15 j 22:50	17°♄07'19		retrograde	1108 May 05 j 18:24	2°≈04'15	
evening set	1102 Oct 26 j 16:36	24°♄15'33			1108 Jun 28 j 03:36	30°♄♄	
conjunction	1102 Nov 12 j 08:10	26°♄12'32	1°44'48	opposition	1108 Jul 15 j 15:01	28°♄43'51	0°-37'-31
minimum elong	1102 Nov 12 j 08:12	26°♄12'32	1°44'47	min. Earth dist.	1108 Jul 15 j 20:21	28°♄42'52	8.91111 AU
max. Earth dist.	1102 Nov 12 j 03:53	26°♄11'16	11.04491 AU	direct	1108 Sep 23 j 09:01	25°♄25'28	
morning rise	1102 Nov 28 j 21:31	28°♄08'55			1108 Dec 09 j 19:30	0°≈	
	1102 Dec 15 j 10:26	0°♄♄		evening set	1109 Jan 01 j 04:24	2°≈30'44	
retrograde	1103 Mar 08 j 16:37	5°♄06'25		conjunction	1109 Jan 17 j 21:32	4°≈30'31	0°-43'-59
opposition	1103 May 17 j 18:18	1°♄49'23	1°56'42	minimum elong	1109 Jan 17 j 21:30	4°≈30'30	0°43'59
min. Earth dist.	1103 May 17 j 21:47	1°♄48'44	9.06216 AU	max. Earth dist.	1109 Jan 17 j 14:21	4°≈28'21	10.86696 AU
	1103 Jun 12 j 22:36	30°♄♄		morning rise	1109 Feb 03 j 17:22	6°≈31'08	
direct	1103 Jul 28 j 00:47	28°♄29'42		retrograde	1109 May 18 j 10:18	13°≈52'52	
	1103 Sep 09 j 20:12	0°♄♄		opposition	1109 Jul 28 j 03:40	10°≈31'10	-1°-10'-17
evening set	1103 Nov 07 j 02:02	5°♄33'51		min. Earth dist.	1109 Jul 28 j 09:17	10°≈30'07	8.81844 AU
conjunction	1103 Nov 23 j 16:46	7°♄30'21	1°25'20	direct	1109 Oct 05 j 08:49	7°≈12'16	
minimum elong	1103 Nov 23 j 16:48	7°♄30'22	1°25'19	evening set	1110 Jan 13 j 02:54	14°≈22'22	
max. Earth dist.	1103 Nov 23 j 12:16	7°♄29'01	11.07200 AU		1110 Jan 18 j 08:48	15°≈	
morning rise	1103 Dec 10 j 05:55	9°♄26'27		conjunction	1110 Jan 29 j 21:37	16°≈23'50	-1°-9'-45
retrograde	1104 Mar 19 j 11:50	16°♄24'11		minimum elong	1110 Jan 29 j 21:34	16°≈23'49	1°09'45
opposition	1104 May 28 j 20:07	13°♄07'01	1°30'46	max. Earth dist.	1110 Jan 29 j 14:29	16°≈21'40	10.76678 AU
min. Earth dist.	1104 May 29 j 00:22	13°♄06'14	9.07764 AU	morning rise	1110 Feb 15 j 19:52	18°≈26'22	
direct	1104 Aug 07 j 22:20	9°♄48'06		retrograde	1110 May 31 j 06:46	25°≈56'53	
evening set	1104 Nov 17 j 09:22	16°♄49'27		opposition	1110 Aug 09 j 21:15	22°≈33'42	-1°-40'-45
conjunction	1104 Dec 03 j 23:41	18°♄45'51	1°02'37	min. Earth dist.	1110 Aug 10 j 02:33	22°≈32'41	8.71210 AU
minimum elong	1104 Dec 03 j 23:43	18°♄45'52	1°02'37	direct	1110 Oct 17 j 14:00	19°≈14'02	
max. Earth dist.	1104 Dec 03 j 17:58	18°♄44'10	11.07637 AU	evening set	1111 Jan 25 j 08:51	26°≈30'18	
morning rise	1104 Dec 20 j 13:26	20°♄42'07		conjunction	1111 Feb 11 j 05:41	28°≈33'44	-1°-32'-56
retrograde	1105 Mar 31 j 06:43	27°♄41'36		minimum elong	1111 Feb 11 j 05:38	28°≈33'44	1°32'57
opposition	1105 Jun 09 j 22:10	24°♄24'01	1°01'22	max. Earth dist.	1111 Feb 11 j 00:03	28°≈32'01	10.65505 AU
min. Earth dist.	1105 Jun 10 j 03:40	24°♄23'00	9.07015 AU		1111 Feb 22 j 23:23	0°✠	
direct	1105 Aug 19 j 18:29	21°♄05'35		morning rise	1111 Feb 28 j 06:31	0°✠38'26	
evening set	1105 Nov 28 j 16:28	28°♄05'37		retrograde	1111 Jun 13 j 12:36	8°✠18'30	
	1105 Dec 14 j 23:05	0°♄		opposition	1111 Aug 22 j 20:17	4°✠53'45	-2°-7'-25
conjunction	1105 Dec 15 j 06:52	0°♄02'17	0°37'26	min. Earth dist.	1111 Aug 23 j 00:17	4°✠52'58	8.59681 AU
				direct	1111 Oct 30 j 01:51	1°✠33'08	



evening set	1112 Feb 06 j 23:44	8° $\text{X}$ 56'38		evening set	1118 Apr 28 j 10:11	0° $\text{II}$	
					1118 Apr 30 j 03:36	0° $\text{II}$ 13'13	
conjunction	1112 Feb 23 j 23:13	11° $\text{X}$ 02'20	-1°-52'-19	conjunction	1118 May 18 j 03:45	2° $\text{II}$ 33'24	-1°-33'-20
minimum elong	1112 Feb 23 j 23:11	11° $\text{X}$ 02'19	1°52'20	minimum elong	1118 May 18 j 03:49	2° $\text{II}$ 33'25	1°33'21
max. Earth dist.	1112 Feb 23 j 19:36	11° $\text{X}$ 01'13	10.53683 AU	max. Earth dist.	1118 May 18 j 09:58	2° $\text{II}$ 35'26	10.01169 AU
morning rise	1112 Mar 12 j 02:58	13° $\text{X}$ 09'26		morning rise	1118 Jun 05 j 06:06	4° $\text{II}$ 54'20	
retrograde	1112 Jun 26 j 03:05	20° $\text{X}$ 59'17		retrograde	1118 Sep 19 j 09:27	13° $\text{II}$ 15'53	
opposition	1112 Sep 04 j 00:58	17° $\text{X}$ 33'00	-2°-28'-43	opposition	1118 Nov 25 j 13:13	9° $\text{II}$ 45'41	-1°-40'-16
min. Earth dist.	1112 Sep 04 j 03:07	17° $\text{X}$ 32'34	8.47783 AU	min. Earth dist.	1118 Nov 25 j 07:50	9° $\text{II}$ 46'48	8.00415 AU
direct	1112 Nov 10 j 17:36	14° $\text{X}$ 11'17		direct	1119 Jan 31 j 01:00	6° $\text{II}$ 17'04	
evening set	1113 Feb 19 j 00:23	21° $\text{X}$ 42'53		evening set	1119 May 15 j 05:48	14° $\text{II}$ 30'10	
conjunction	1113 Mar 08 j 02:59	23° $\text{X}$ 51'04	-2°-6'-39	conjunction	1119 Jun 02 j 09:04	16° $\text{II}$ 51'23	-1°-6'-3
minimum elong	1113 Mar 08 j 02:58	23° $\text{X}$ 51'04	2°06'40	minimum elong	1119 Jun 02 j 09:07	16° $\text{II}$ 51'24	1°06'05
max. Earth dist.	1113 Mar 08 j 00:39	23° $\text{X}$ 50'20	10.41768 AU	max. Earth dist.	1119 Jun 02 j 16:40	16° $\text{II}$ 53'52	10.00256 AU
morning rise	1113 Mar 25 j 10:10	26° $\text{X}$ 00'45		morning rise	1119 Jun 20 j 13:17	19° $\text{II}$ 12'55	
	1113 Apr 29 j 09:12	0° $\text{Y}$		retrograde	1119 Oct 03 j 22:54	27° $\text{II}$ 31'13	
retrograde	1113 Jul 10 j 00:41	4° $\text{Y}$ 00'06		opposition	1119 Dec 09 j 19:02	24° $\text{II}$ 01'42	-1°-3'-25
opposition	1113 Sep 17 j 11:36	0° $\text{Y}$ 32'24	-2°-43'-7	min. Earth dist.	1119 Dec 09 j 12:50	24° $\text{II}$ 02'59	8.00938 AU
min. Earth dist.	1113 Sep 17 j 12:25	0° $\text{Y}$ 32'15	8.36075 AU	direct	1120 Feb 14 j 12:03	20° $\text{II}$ 32'27	
	1113 Sep 24 j 07:58	30° $\text{R}$ $\text{X}$		evening set	1120 May 29 j 09:55	28° $\text{II}$ 47'09	
direct	1113 Nov 23 j 16:26	27° $\text{X}$ 09'29			1120 Jun 07 j 20:15	0° $\text{S}$	
	1114 Jan 20 j 02:46	0° $\text{Y}$		conjunction	1120 Jun 16 j 14:45	1° $\text{S}$ 08'28	0°-34'-45
evening set	1114 Mar 04 j 11:11	4° $\text{Y}$ 49'41		minimum elong	1120 Jun 16 j 14:47	1° $\text{S}$ 08'29	0°34'47
conjunction	1114 Mar 21 j 17:25	7° $\text{Y}$ 00'29	-2°-14'-47	max. Earth dist.	1120 Jun 16 j 22:55	1° $\text{S}$ 11'08	10.02299 AU
minimum elong	1114 Mar 21 j 17:24	7° $\text{Y}$ 00'29	2°14'48	morning rise	1120 Jul 04 j 19:12	3° $\text{S}$ 29'40	
max. Earth dist.	1114 Mar 21 j 16:13	7° $\text{Y}$ 00'07	10.30346 AU	retrograde	1120 Oct 17 j 08:21	11° $\text{S}$ 42'21	
morning rise	1114 Apr 08 j 04:28	9° $\text{Y}$ 12'49		opposition	1120 Dec 22 j 23:05	8° $\text{S}$ 13'52	0°-22'-51
retrograde	1114 Jul 24 j 04:02	17° $\text{Y}$ 20'47		min. Earth dist.	1120 Dec 22 j 16:55	8° $\text{S}$ 15'08	8.04392 AU
opposition	1114 Oct 01 j 03:56	13° $\text{Y}$ 51'56	-2°-49'-14	direct	1121 Feb 28 j 00:36	4° $\text{S}$ 44'19	
min. Earth dist.	1114 Oct 01 j 03:45	13° $\text{Y}$ 51'58	8.25153 AU	evening set	1121 Jun 13 j 12:49	12° $\text{S}$ 58'27	
direct	1114 Dec 06 j 23:54	10° $\text{Y}$ 27'43		conjunction	1121 Jul 01 j 17:23	15° $\text{S}$ 18'55	0°-1'-35
evening set	1115 Mar 18 j 08:08	18° $\text{Y}$ 16'31		minimum elong	1121 Jul 01 j 17:24	15° $\text{S}$ 18'55	0°01'36
conjunction	1115 Apr 04 j 18:39	20° $\text{Y}$ 30'01	-2°-15'-48	behind sun begin	1121 Jul 01 j 10:01	15° $\text{S}$ 16'33	
minimum elong	1115 Apr 04 j 18:40	20° $\text{Y}$ 30'01	2°15'49	behind sun end	1121 Jul 02 j 00:46	15° $\text{S}$ 21'17	
max. Earth dist.	1115 Apr 04 j 18:50	20° $\text{Y}$ 30'05	10.20029 AU	max. Earth dist.	1121 Jul 02 j 01:19	15° $\text{S}$ 21'27	10.07180 AU
morning rise	1115 Apr 22 j 09:54	22° $\text{Y}$ 45'01		morning rise	1121 Jul 19 j 20:24	17° $\text{S}$ 38'51	
	1115 Jul 04 j 15:07	0° $\text{Z}$		asc. node	1121 Jul 19 j 09:01	17° $\text{S}$ 35'14	
retrograde	1115 Aug 07 j 13:30	1° $\text{Z}$ 00'00		retrograde	1121 Oct 31 j 11:37	25° $\text{S}$ 44'07	
	1115 Sep 10 j 16:16	30° $\text{R}$ $\text{Y}$		opposition	1122 Jan 06 j 00:11	22° $\text{S}$ 16'55	0°18'36
opposition	1115 Oct 15 j 01:23	27° $\text{Y}$ 30'15	-2°-46'-4	min. Earth dist.	1122 Jan 05 j 18:19	22° $\text{S}$ 18'07	8.10570 AU
min. Earth dist.	1115 Oct 15 j 00:16	27° $\text{Y}$ 30'29	8.15619 AU	direct	1122 Mar 14 j 13:00	18° $\text{S}$ 47'23	
direct	1115 Dec 20 j 14:22	24° $\text{Y}$ 04'45		evening set	1122 Jun 28 j 11:29	26° $\text{S}$ 58'53	
	1116 Mar 15 j 04:05	0° $\text{Z}$		conjunction	1122 Jul 16 j 14:05	29° $\text{S}$ 17'36	0°31'21
evening set	1116 Mar 31 j 14:41	2° $\text{Z}$ 01'37		minimum elong	1122 Jul 16 j 14:04	29° $\text{S}$ 17'35	0°31'21
conjunction	1116 Apr 18 j 05:56	4° $\text{Z}$ 17'44	-2°-9'-8	max. Earth dist.	1122 Jul 16 j 21:24	29° $\text{S}$ 19'57	10.14587 AU
minimum elong	1116 Apr 18 j 05:58	4° $\text{Z}$ 17'45	2°09'09		1122 Jul 22 j 02:06	0° $\text{Z}$	
max. Earth dist.	1116 Apr 18 j 08:05	4° $\text{Z}$ 18'26	10.11401 AU	morning rise	1122 Aug 03 j 14:05	1° $\text{Z}$ 35'27	
morning rise	1116 May 06 j 01:25	6° $\text{Z}$ 35'12		retrograde	1122 Nov 14 j 06:26	9° $\text{Z}$ 32'06	
retrograde	1116 Aug 21 j 02:58	14° $\text{Z}$ 55'03		opposition	1123 Jan 19 j 20:57	6° $\text{Z}$ 06'22	0°58'15
opposition	1116 Oct 28 j 02:56	11° $\text{Z}$ 24'44	-2°-33'-10	min. Earth dist.	1123 Jan 19 j 15:23	6° $\text{Z}$ 07'30	8.19074 AU
min. Earth dist.	1116 Oct 28 j 00:32	11° $\text{Z}$ 25'14	8.08022 AU	direct	1123 Mar 28 j 23:41	2° $\text{Z}$ 37'10	
direct	1117 Jan 02 j 12:12	7° $\text{Z}$ 58'02		evening set	1123 Jul 13 j 03:42	10° $\text{Z}$ 44'10	
	1117 Apr 07 j 01:07	15° $\text{Z}$		conjunction	1123 Jul 31 j 02:54	13° $\text{Z}$ 00'27	1°01'54
evening set	1117 Apr 15 j 05:48	16° $\text{Z}$ 01'58		minimum elong	1123 Jul 31 j 02:51	13° $\text{Z}$ 00'26	1°01'53
conjunction	1117 May 03 j 01:46	18° $\text{Z}$ 20'23	-1°-54'-47	max. Earth dist.	1123 Jul 31 j 09:22	13° $\text{Z}$ 02'31	10.24045 AU
minimum elong	1117 May 03 j 01:49	18° $\text{Z}$ 20'24	1°54'48		1123 Aug 15 j 20:40	15° $\text{Z}$	
max. Earth dist.	1117 May 03 j 06:04	18° $\text{Z}$ 21'47	10.04972 AU	morning rise	1123 Aug 17 j 22:34	15° $\text{Z}$ 15'35	
morning rise	1117 May 21 j 01:04	20° $\text{Z}$ 39'53		retrograde	1123 Nov 27 j 17:34	23° $\text{Z}$ 03'01	
retrograde	1117 Sep 04 j 18:21	29° $\text{Z}$ 01'58		opposition	1124 Feb 02 j 12:26	19° $\text{Z}$ 38'48	1°33'43
opposition	1117 Nov 11 j 07:20	25° $\text{Z}$ 31'31	-2°-10'-50	min. Earth dist.	1124 Feb 02 j 07:05	19° $\text{Z}$ 39'52	8.29367 AU
min. Earth dist.	1117 Nov 11 j 03:20	25° $\text{Z}$ 32'21	8.02834 AU	direct	1124 Apr 11 j 04:56	16° $\text{Z}$ 10'13	
direct	1118 Jan 16 j 16:31	22° $\text{Z}$ 03'45					



evening set	1124 Jul 26 j 11:14	24°♏11'11		evening set	1130 Oct 10 j 12:50	8°♍11'07	
conjunction	1124 Aug 13 j 06:01	26°♏24'34	1°28'25	conjunction	1130 Oct 27 j 06:57	10°♍09'41	2°05'23
minimum elong	1124 Aug 13 j 05:57	26°♏24'33	1°28'25	minimum elong	1130 Oct 27 j 06:58	10°♍09'42	2°05'23
max. Earth dist.	1124 Aug 13 j 11:45	26°♏26'23	10.34975 AU	max. Earth dist.	1130 Oct 27 j 03:24	10°♍08'38	10.96538 AU
morning rise	1124 Aug 30 j 20:30	28°♏36'36		morning rise	1130 Nov 12 j 21:39	12°♍07'20	
	1124 Sep 11 j 08:16	0°♐			1130 Dec 09 j 02:00	15°♍	
retrograde	1124 Dec 09 j 21:59	6°♐14'45		retrograde	1131 Feb 20 j 09:23	19°♍07'32	
opposition	1125 Feb 14 j 22:24	2°♐52'00	2°03'15	opposition	1131 Apr 30 j 20:34	15°♍50'22	2°25'48
min. Earth dist.	1125 Feb 14 j 17:22	2°♐53'00	8.40825 AU	min. Earth dist.	1131 May 01 j 00:07	15°♍49'42	8.99575 AU
	1125 Mar 29 j 15:48	30°♑♏			1131 May 12 j 06:14	15°♑♍	
direct	1125 Apr 25 j 03:56	29°♏24'18		direct	1131 Jul 11 j 01:54	12°♍29'17	
	1125 May 21 j 14:07	0°♐			1131 Sep 06 j 10:52	15°♍	
evening set	1125 Aug 09 j 08:29	7°♐18'02		evening set	1131 Oct 22 j 04:37	19°♍40'10	
conjunction	1125 Aug 26 j 22:20	9°♐28'21	1°49'44	conjunction	1131 Nov 07 j 20:49	21°♍37'39	1°51'50
minimum elong	1125 Aug 26 j 22:17	9°♐28'20	1°49'44	minimum elong	1131 Nov 07 j 20:51	21°♍37'39	1°51'50
max. Earth dist.	1125 Aug 27 j 03:28	9°♐29'57	10.46731 AU	max. Earth dist.	1131 Nov 07 j 15:48	21°♍36'10	11.01841 AU
morning rise	1125 Sep 13 j 07:21	11°♐37'13		morning rise	1131 Nov 24 j 10:27	23°♍34'25	
retrograde	1125 Dec 22 j 18:21	19°♐06'25			1132 Feb 06 j 11:08	0°♑	
opposition	1126 Feb 28 j 02:29	15°♐45'03	2°25'42	retrograde	1132 Mar 03 j 02:31	0°♑32'47	
min. Earth dist.	1126 Feb 27 j 22:48	15°♐45'47	8.52781 AU		1132 Mar 29 j 03:59	30°♑♍	
direct	1126 May 08 j 20:17	12°♐18'21		opposition	1132 May 12 j 00:12	27°♍15'39	2°06'23
evening set	1126 Aug 22 j 19:13	20°♐04'16		min. Earth dist.	1132 May 12 j 05:21	27°♍14'42	9.03820 AU
				direct	1132 Jul 22 j 06:08	23°♍55'23	
conjunction	1126 Sep 09 j 04:01	22°♐11'32	2°05'07		1132 Oct 23 j 14:25	0°♑	
minimum elong	1126 Sep 09 j 03:58	22°♐11'32	2°05'07	evening set	1132 Nov 01 j 15:52	1°♑01'45	
max. Earth dist.	1126 Sep 09 j 07:22	22°♐12'34	10.58635 AU				
morning rise	1126 Sep 26 j 07:52	24°♐17'22		conjunction	1132 Nov 18 j 06:51	2°♑58'33	1°33'59
	1126 Nov 21 j 16:44	0°♑		minimum elong	1132 Nov 18 j 06:54	2°♑58'33	1°33'59
retrograde	1127 Jan 04 j 07:02	1°♑38'20		max. Earth dist.	1132 Nov 18 j 00:20	2°♑56'37	11.05047 AU
	1127 Feb 18 j 01:41	30°♑♐		morning rise	1132 Dec 04 j 20:14	4°♑54'54	
opposition	1127 Mar 13 j 00:41	28°♐18'15	2°40'29	retrograde	1133 Mar 14 j 20:39	11°♑52'53	
min. Earth dist.	1127 Mar 12 j 23:08	28°♐18'33	8.64543 AU	opposition	1133 May 24 j 02:26	8°♑35'31	1°42'13
direct	1127 May 22 j 06:02	24°♐52'38		min. Earth dist.	1133 May 24 j 08:05	8°♑34'29	9.05902 AU
	1127 Aug 13 j 20:05	0°♑		direct	1133 Aug 03 j 07:05	5°♑15'53	
evening set	1127 Sep 04 j 19:26	2°♑30'37		evening set	1133 Nov 13 j 00:04	12°♑18'56	
conjunction	1127 Sep 21 j 23:25	4°♑35'06	2°14'13	conjunction	1133 Nov 29 j 14:38	14°♑15'31	1°12'33
minimum elong	1127 Sep 21 j 23:24	4°♑35'06	2°14'13	minimum elong	1133 Nov 29 j 14:40	14°♑15'31	1°12'33
max. Earth dist.	1127 Sep 22 j 00:04	4°♑35'18	10.70021 AU	max. Earth dist.	1133 Nov 29 j 08:03	14°♑13'34	11.06049 AU
morning rise	1127 Oct 08 j 22:46	6°♑38'12		morning rise	1133 Dec 16 j 04:15	16°♑11'52	
retrograde	1128 Jan 16 j 13:40	13°♑52'03		retrograde	1134 Mar 26 j 15:14	23°♑11'01	
opposition	1128 Mar 24 j 17:47	10°♑33'05	2°47'32	opposition	1134 Jun 05 j 04:21	19°♑53'09	1°14'10
min. Earth dist.	1128 Mar 24 j 18:14	10°♑33'00	8.75490 AU	min. Earth dist.	1134 Jun 05 j 09:46	19°♑52'09	9.05746 AU
direct	1128 Jun 03 j 08:21	7°♑08'41		direct	1134 Aug 15 j 04:42	16°♑33'59	
evening set	1128 Sep 16 j 09:36	14°♑38'57		evening set	1134 Nov 24 j 07:15	23°♑35'07	
conjunction	1128 Oct 03 j 09:25	16°♑41'01	2°17'05	conjunction	1134 Dec 10 j 21:48	25°♑31'51	0°48'18
minimum elong	1128 Oct 03 j 09:24	16°♑41'01	2°17'06	minimum elong	1134 Dec 10 j 21:50	25°♑31'51	0°48'18
max. Earth dist.	1128 Oct 03 j 07:37	16°♑40'28	10.80361 AU	max. Earth dist.	1134 Dec 10 j 15:33	25°♑30'00	11.04803 AU
morning rise	1128 Oct 20 j 05:05	18°♑41'50		morning rise	1134 Dec 27 j 12:04	27°♑28'35	
retrograde	1129 Jan 27 j 14:29	25°♑49'52			1135 Jan 19 j 09:51	0°♑	
opposition	1129 Apr 06 j 06:18	22°♑31'45	2°47'04	retrograde	1135 Apr 07 j 14:04	4°♑30'26	
min. Earth dist.	1129 Apr 06 j 07:41	22°♑31'30	8.85179 AU	opposition	1135 Jun 17 j 07:03	1°♑11'53	0°43'11
direct	1129 Jun 16 j 04:52	19°♑08'33		min. Earth dist.	1135 Jun 17 j 12:32	1°♑10'52	9.03364 AU
evening set	1129 Sep 28 j 14:58	26°♑31'37			1135 Jul 03 j 21:46	30°♑♑	
				direct	1135 Aug 27 j 01:04	27°♑53'01	
conjunction	1129 Oct 15 j 11:32	28°♑31'42	2°14'00		1135 Oct 17 j 20:42	0°♑	
minimum elong	1129 Oct 15 j 11:33	28°♑31'42	2°14'00	evening set	1135 Dec 05 j 15:06	4°♑53'40	
max. Earth dist.	1129 Oct 15 j 08:45	28°♑30'52	10.89298 AU				
	1129 Oct 27 j 19:54	0°♍		conjunction	1135 Dec 22 j 05:55	6°♑50'56	0°22'05
morning rise	1129 Nov 01 j 04:18	0°♍30'42		minimum elong	1135 Dec 22 j 05:56	6°♑50'56	0°22'05
retrograde	1130 Feb 08 j 13:48	7°♍34'10		max. Earth dist.	1135 Dec 21 j 22:54	6°♑48'52	11.01367 AU
opposition	1130 Apr 18 j 14:51	4°♍16'40	2°39'37	morning rise	1136 Jan 07 j 21:27	8°♑48'28	
min. Earth dist.	1130 Apr 18 j 17:04	4°♍16'15	8.93296 AU	retrograde	1136 Apr 18 j 15:12	15°♑54'32	
direct	1130 Jun 28 j 19:17	0°♍54'35		opposition	1136 Jun 28 j 11:41	12°♑35'06	0°10'17



min. Earth dist.	1136 Jun 28 j 17:43	12°☾33'58	8.98852 AU	morning rise	1142 Mar 20 j 05:02	20°☾51'53	
direct	1136 Sep 06 j 19:38	9°☾16'18		retrograde	1142 Jul 04 j 13:25	28°☾47'31	
desc. node	1136 Oct 21 j 20:35	10°☾54'14		opposition	1142 Sep 12 j 05:54	25°☾20'34	-2°-37'-56
evening set	1136 Dec 16 j 01:11	16°☾18'03		min. Earth dist.	1142 Sep 12 j 07:05	25°☾20'20	8.41000 AU
				direct	1142 Nov 18 j 15:27	21°☾58'22	
conjunction	1137 Jan 01 j 16:41	18°☾16'11	0°-5'-18	evening set	1143 Feb 27 j 04:50	29°☾35'07	
minimum elong	1137 Jan 01 j 16:41	18°☾16'11	0°05'20		1143 Mar 02 j 12:52	0°☿	
behind sun begin	1137 Jan 01 j 09:56	18°☾14'12					
behind sun end	1137 Jan 01 j 23:26	18°☾18'10		conjunction	1143 Mar 16 j 09:29	1°☿44'48	-2°-12'-6
max. Earth dist.	1137 Jan 01 j 09:16	18°☾14'00	10.95859 AU	minimum elong	1143 Mar 16 j 09:28	1°☿44'48	2°12'07
morning rise	1137 Jan 18 j 09:56	20°☾14'50		max. Earth dist.	1143 Mar 16 j 09:21	1°☿44'46	10.35374 AU
retrograde	1137 Apr 30 j 20:36	27°☾26'39		morning rise	1143 Apr 02 j 18:50	3°☿56'00	
opposition	1137 Jul 10 j 19:03	24°☾06'09	0°-23'-26	retrograde	1143 Jul 18 j 14:36	12°☿00'37	
min. Earth dist.	1137 Jul 11 j 01:05	24°☾05'01	8.92356 AU	opposition	1143 Sep 25 j 20:19	8°☿32'33	-2°-47'-35
direct	1137 Sep 18 j 17:58	20°☾47'13		min. Earth dist.	1143 Sep 25 j 19:39	8°☿32'41	8.30199 AU
evening set	1137 Dec 27 j 15:19	27°☾51'36		direct	1143 Dec 01 j 20:18	5°☿09'19	
				evening set	1144 Mar 11 j 21:58	12°☿54'30	
conjunction	1138 Jan 13 j 08:00	29°☾50'58	0°-32'-42				
minimum elong	1138 Jan 13 j 07:59	29°☾50'57	0°32'43	conjunction	1144 Mar 29 j 06:44	15°☿06'50	-2°-16'-8
max. Earth dist.	1138 Jan 13 j 01:29	29°☾49'01	10.88451 AU	minimum elong	1144 Mar 29 j 06:45	15°☿06'50	2°16'09
	1138 Jan 14 j 14:07	0°♊		max. Earth dist.	1144 Mar 29 j 08:45	15°☿07'28	10.25031 AU
morning rise	1138 Jan 30 j 03:02	1°♊51'03		morning rise	1144 Apr 15 j 20:01	17°☿20'38	
retrograde	1138 May 13 j 09:39	9°♊09'58		retrograde	1144 Jul 31 j 23:19	25°☿32'48	
opposition	1138 Jul 23 j 05:57	5°♊48'15	0°-56'-46	opposition	1144 Oct 08 j 15:52	22°☿03'52	-2°-48'-17
min. Earth dist.	1138 Jul 23 j 10:55	5°♊47'19	8.84099 AU	min. Earth dist.	1144 Oct 08 j 13:33	22°☿04'20	8.20504 AU
direct	1138 Sep 30 j 17:55	2°♊29'02		direct	1144 Dec 14 j 06:49	18°☿39'29	
evening set	1139 Jan 08 j 11:06	9°♊37'31		evening set	1145 Mar 26 j 01:01	26°☿32'47	
conjunction	1139 Jan 25 j 05:17	11°♊38'24	0°-59'-12	conjunction	1145 Apr 12 j 14:15	28°☿47'43	-2°-12'-39
minimum elong	1139 Jan 25 j 05:15	11°♊38'24	0°59'13	minimum elong	1145 Apr 12 j 14:17	28°☿47'43	2°12'40
max. Earth dist.	1139 Jan 25 j 00:01	11°♊36'49	10.79413 AU	max. Earth dist.	1145 Apr 12 j 17:43	28°☿48'49	10.16078 AU
morning rise	1139 Feb 11 j 02:22	13°♊40'15			1145 Apr 21 j 22:45	0°♋	
	1139 Feb 22 j 12:44	15°♊		morning rise	1145 Apr 30 j 07:43	1°♋04'01	
retrograde	1139 May 26 j 05:27	21°♊07'27		retrograde	1145 Aug 15 j 12:13	9°♋21'45	
opposition	1139 Aug 04 j 21:39	17°♊44'25	-1°-28'-24	opposition	1145 Oct 22 j 15:59	5°♋52'12	-2°-39'-23
min. Earth dist.	1139 Aug 05 j 01:20	17°♊43'43	8.74398 AU	min. Earth dist.	1145 Oct 22 j 12:34	5°♋52'54	8.12424 AU
	1139 Sep 16 j 08:34	15°♋		direct	1145 Dec 28 j 01:22	2°♋26'38	
direct	1139 Oct 12 j 20:21	14°♋24'44		evening set	1146 Apr 09 j 12:42	10°♋27'14	
	1139 Nov 07 j 22:35	15°♋					
evening set	1140 Jan 20 j 13:58	21°♋38'42		conjunction	1146 Apr 27 j 06:32	12°♋44'32	-2°-1'-26
				minimum elong	1146 Apr 27 j 06:35	12°♋44'33	2°01'28
conjunction	1140 Feb 06 j 09:55	23°♋41'25	-1°-23'-37	max. Earth dist.	1146 Apr 27 j 10:39	12°♋45'52	10.08980 AU
minimum elong	1140 Feb 06 j 09:53	23°♋41'24	1°23'38		1146 May 14 j 18:33	15°♋	
max. Earth dist.	1140 Feb 06 j 05:13	23°♋39'58	10.69113 AU	morning rise	1146 May 15 j 04:06	15°♋03'02	
morning rise	1140 Feb 23 j 09:33	25°♋45'17		retrograde	1146 Aug 30 j 03:10	23°♋23'58	
	1140 Apr 02 j 07:32	0°♌		opposition	1146 Nov 05 j 19:25	19°♋54'09	-2°-20'-52
retrograde	1140 Jun 07 j 08:58	3°♌21'41		min. Earth dist.	1146 Nov 05 j 15:44	19°♋54'54	8.06367 AU
opposition	1140 Aug 16 j 18:40	29°♌57'18	-1°-56'-50	direct	1147 Jan 11 j 03:02	16°♋27'27	
	1140 Aug 16 j 04:35	30°♌		evening set	1147 Apr 24 j 07:51	24°♋34'11	
min. Earth dist.	1140 Aug 16 j 21:38	29°♌56'44	8.63654 AU				
direct	1140 Oct 24 j 04:17	26°♌36'54		conjunction	1147 May 12 j 06:04	26°♋53'29	-1°-42'-49
	1140 Dec 27 j 09:41	0°♍		minimum elong	1147 May 12 j 06:08	26°♋53'30	1°42'51
evening set	1141 Feb 01 j 01:24	3°♍57'37		max. Earth dist.	1147 May 12 j 10:39	26°♋54'58	10.04102 AU
				morning rise	1147 May 30 j 07:13	29°♋13'42	
conjunction	1141 Feb 17 j 23:35	6°♍02'26	-1°-44'-44		1147 Jun 05 j 09:31	0°♎	
minimum elong	1141 Feb 17 j 23:32	6°♍02'25	1°44'44	retrograde	1147 Sep 13 j 18:22	7°♎35'15	
max. Earth dist.	1141 Feb 17 j 19:22	6°♍01'08	10.57990 AU	opposition	1147 Nov 20 j 00:46	4°♎05'33	-1°-53'-33
morning rise	1141 Mar 07 j 02:09	8°♍08'36		min. Earth dist.	1147 Nov 19 j 20:52	4°♎06'22	8.02693 AU
retrograde	1141 Jun 20 j 19:38	15°♍54'36		direct	1148 Jan 25 j 10:10	0°♎37'53	
opposition	1141 Aug 29 j 21:15	12°♍28'55	-2°-20'-32	evening set	1148 May 08 j 08:29	8°♎49'11	
min. Earth dist.	1141 Aug 29 j 23:41	12°♍28'26	8.52342 AU				
direct	1141 Nov 05 j 17:54	9°♍07'40		conjunction	1148 May 26 j 10:21	11°♎09'53	-1°-17'-48
evening set	1142 Feb 13 j 22:10	16°♍36'07		minimum elong	1148 May 26 j 10:24	11°♎09'54	1°17'50
				max. Earth dist.	1148 May 26 j 15:37	11°♎11'36	10.01795 AU
conjunction	1142 Mar 02 j 23:15	18°♍43'16	-2°-1'-18	morning rise	1148 Jun 13 j 14:01	13°♎31'06	
minimum elong	1142 Mar 02 j 23:13	18°♍43'15	2°01'18	retrograde	1148 Sep 27 j 08:07	21°♎50'37	
max. Earth dist.	1142 Mar 02 j 20:41	18°♍42'28	10.46556 AU	opposition	1148 Dec 03 j 06:43	18°♎21'24	-1°-19'-5



min. Earth dist.	1148 Dec 03 j 02:16	18° $\Pi$ 22'19	8.01740 AU	evening set	1154 Aug 03 j 23:15	2° $\mathbb{M}$ 06'35	
direct	1149 Feb 07 j 20:46	14° $\Pi$ 52'55					
evening set	1149 May 23 j 11:58	23° $\Pi$ 06'49		conjunction	1154 Aug 21 j 15:11	4° $\mathbb{M}$ 18'14	1°41'34
				minimum elong	1154 Aug 21 j 15:07	4° $\mathbb{M}$ 18'13	1°41'34
conjunction	1149 Jun 10 j 16:09	25° $\Pi$ 28'03	0°-47'-57	max. Earth dist.	1154 Aug 21 j 19:15	4° $\mathbb{M}$ 19'30	10.41244 AU
minimum elong	1149 Jun 10 j 16:11	25° $\Pi$ 28'04	0°47'59	morning rise	1154 Sep 08 j 02:39	6° $\mathbb{M}$ 28'27	
max. Earth dist.	1149 Jun 10 j 22:20	25° $\Pi$ 30'04	10.02320 AU	retrograde	1154 Dec 17 j 18:11	14° $\mathbb{M}$ 01'11	
morning rise	1149 Jun 28 j 20:45	27° $\Pi$ 49'22		opposition	1155 Feb 22 j 23:49	10° $\mathbb{M}$ 38'53	2°17'17
	1149 Jul 16 j 10:25	0° $\mathfrak{S}$		min. Earth dist.	1155 Feb 22 j 20:49	10° $\mathbb{M}$ 39'28	8.47120 AU
retrograde	1149 Oct 11 j 18:52	6° $\mathfrak{S}$ 04'21		direct	1155 May 03 j 13:30	7° $\mathbb{M}$ 11'15	
opposition	1149 Dec 17 j 11:37	2° $\mathfrak{S}$ 35'52	0°-39'-47	evening set	1155 Aug 17 j 14:05	15° $\mathbb{M}$ 00'25	
min. Earth dist.	1149 Dec 17 j 06:18	2° $\mathfrak{S}$ 36'58	8.03673 AU				
	1150 Jan 22 j 01:57	30° $\mathbb{R}$ $\Pi$		conjunction	1155 Sep 04 j 00:57	17° $\mathbb{M}$ 08'59	1°59'28
direct	1150 Feb 22 j 09:45	29° $\Pi$ 06'50		minimum elong	1155 Sep 04 j 00:54	17° $\mathbb{M}$ 08'58	1°59'28
	1150 Mar 25 j 14:18	0° $\mathfrak{S}$		max. Earth dist.	1155 Sep 04 j 03:30	17° $\mathbb{M}$ 09'46	10.52922 AU
evening set	1150 Jun 07 j 15:29	7° $\mathfrak{S}$ 21'07		morning rise	1155 Sep 21 j 07:10	19° $\mathbb{M}$ 16'07	
				retrograde	1155 Dec 30 j 08:31	26° $\mathbb{M}$ 40'21	
conjunction	1150 Jun 25 j 20:20	9° $\mathfrak{S}$ 41'56	0°-15'-19	opposition	1156 Mar 06 j 23:59	23° $\mathbb{M}$ 19'16	2°35'18
minimum elong	1150 Jun 25 j 20:21	9° $\mathfrak{S}$ 41'57	0°15'21	min. Earth dist.	1156 Mar 06 j 21:30	23° $\mathbb{M}$ 19'45	8.58871 AU
behind sun begin	1150 Jun 25 j 18:40	9° $\mathfrak{S}$ 41'24		direct	1156 May 16 j 02:50	19° $\mathbb{M}$ 52'40	
behind sun end	1150 Jun 25 j 22:03	9° $\mathfrak{S}$ 42'29		evening set	1156 Aug 29 j 18:11	27° $\mathbb{M}$ 33'54	
max. Earth dist.	1150 Jun 26 j 03:28	9° $\mathfrak{S}$ 44'14	10.05713 AU				
morning rise	1150 Jul 14 j 00:10	12° $\mathfrak{S}$ 02'25		conjunction	1156 Sep 16 j 00:14	29° $\mathbb{M}$ 39'33	2°11'12
retrograde	1150 Oct 26 j 00:10	20° $\mathfrak{S}$ 10'45		minimum elong	1156 Sep 16 j 00:12	29° $\mathbb{M}$ 39'33	2°11'12
asc. node	1150 Dec 17 j 04:28	17° $\mathfrak{S}$ 52'58		max. Earth dist.	1156 Sep 16 j 02:02	29° $\mathbb{M}$ 40'06	10.64535 AU
opposition	1150 Dec 31 j 13:49	16° $\mathfrak{S}$ 43'15	0°01'35		1156 Sep 18 j 19:06	0° $\mathfrak{A}$	
min. Earth dist.	1150 Dec 31 j 07:49	16° $\mathfrak{S}$ 44'29	8.08410 AU	morning rise	1156 Oct 03 j 01:32	1° $\mathfrak{A}$ 43'48	
direct	1151 Mar 08 j 22:32	13° $\mathfrak{S}$ 13'56		retrograde	1157 Jan 10 j 18:39	9° $\mathfrak{A}$ 00'24	
evening set	1151 Jun 22 j 16:05	21° $\mathfrak{S}$ 26'28		opposition	1157 Mar 19 j 18:46	5° $\mathfrak{A}$ 40'28	2°45'35
				min. Earth dist.	1157 Mar 19 j 17:04	5° $\mathfrak{A}$ 40'47	8.70276 AU
conjunction	1151 Jul 10 j 19:51	23° $\mathfrak{S}$ 45'56	0°17'57	direct	1157 May 29 j 06:56	2° $\mathfrak{A}$ 15'03	
minimum elong	1151 Jul 10 j 19:50	23° $\mathfrak{S}$ 45'56	0°17'57	evening set	1157 Sep 11 j 11:51	9° $\mathfrak{A}$ 48'16	
max. Earth dist.	1151 Jul 11 j 03:23	23° $\mathfrak{S}$ 48'21	10.11761 AU				
morning rise	1151 Jul 28 j 21:12	26° $\mathfrak{S}$ 04'40		conjunction	1157 Sep 28 j 13:36	11° $\mathfrak{A}$ 51'20	2°16'41
	1151 Aug 31 j 06:38	0° $\mathfrak{Q}$		minimum elong	1157 Sep 28 j 13:35	11° $\mathfrak{A}$ 51'20	2°16'41
retrograde	1151 Nov 08 j 22:40	4° $\mathfrak{Q}$ 04'51		max. Earth dist.	1157 Sep 28 j 14:34	11° $\mathfrak{A}$ 51'38	10.75550 AU
opposition	1152 Jan 14 j 12:15	0° $\mathfrak{Q}$ 38'33	0°42'14	morning rise	1157 Oct 15 j 10:41	13° $\mathfrak{A}$ 53'04	
min. Earth dist.	1152 Jan 14 j 06:24	0° $\mathfrak{Q}$ 39'45	8.15634 AU	retrograde	1158 Jan 22 j 21:32	21° $\mathfrak{A}$ 03'07	
	1152 Jan 22 j 10:00	30° $\mathbb{R}$ $\mathfrak{S}$		opposition	1158 Apr 01 j 08:34	17° $\mathfrak{A}$ 44'10	2°48'14
direct	1152 Mar 22 j 09:24	27° $\mathfrak{S}$ 09'14		min. Earth dist.	1158 Apr 01 j 08:28	17° $\mathfrak{A}$ 44'11	8.80827 AU
	1152 May 19 j 17:49	0° $\mathfrak{Q}$		direct	1158 Jun 11 j 04:25	14° $\mathfrak{A}$ 20'01	
evening set	1152 Jul 06 j 11:03	5° $\mathfrak{Q}$ 18'01		evening set	1158 Sep 23 j 20:21	21° $\mathfrak{A}$ 45'38	
conjunction	1152 Jul 24 j 11:58	7° $\mathfrak{Q}$ 35'21	0°49'39	conjunction	1158 Oct 10 j 18:20	23° $\mathfrak{A}$ 46'28	2°16'04
minimum elong	1152 Jul 24 j 11:56	7° $\mathfrak{Q}$ 35'21	0°49'38	minimum elong	1158 Oct 10 j 18:20	23° $\mathfrak{A}$ 46'28	2°16'04
max. Earth dist.	1152 Jul 24 j 19:03	7° $\mathfrak{Q}$ 37'37	10.20056 AU	max. Earth dist.	1158 Oct 10 j 17:27	23° $\mathfrak{A}$ 46'12	10.85492 AU
morning rise	1152 Aug 11 j 09:24	9° $\mathfrak{Q}$ 51'37		morning rise	1158 Oct 27 j 12:12	25° $\mathfrak{A}$ 46'08	
	1152 Sep 26 j 16:09	15° $\mathfrak{Q}$			1158 Dec 06 j 11:21	0° $\mathbb{M}$	
retrograde	1152 Nov 21 j 13:32	17° $\mathfrak{Q}$ 42'47		retrograde	1159 Feb 03 j 20:01	2° $\mathbb{M}$ 50'50	
	1153 Jan 18 j 11:56	15° $\mathbb{R}$ $\mathfrak{Q}$			1159 Apr 07 j 16:49	30° $\mathbb{R}$ $\mathfrak{A}$	
opposition	1153 Jan 27 j 05:46	14° $\mathfrak{Q}$ 17'48	1°19'39	opposition	1159 Apr 13 j 18:00	29° $\mathfrak{A}$ 32'44	2°43'40
min. Earth dist.	1153 Jan 27 j 00:44	14° $\mathfrak{Q}$ 18'50	8.24881 AU	min. Earth dist.	1159 Apr 13 j 19:40	29° $\mathfrak{A}$ 32'25	8.90085 AU
direct	1153 Apr 05 j 15:40	10° $\mathfrak{Q}$ 48'47		direct	1159 Jun 23 j 20:13	26° $\mathfrak{A}$ 09'50	
	1153 Jun 17 j 08:44	15° $\mathfrak{Q}$			1159 Sep 03 j 18:28	0° $\mathbb{M}$	
evening set	1153 Jul 20 j 22:00	18° $\mathfrak{Q}$ 52'09		evening set	1159 Oct 05 j 20:40	3° $\mathbb{M}$ 28'29	
conjunction	1153 Aug 07 j 18:47	21° $\mathfrak{Q}$ 06'48	1°17'59	conjunction	1159 Oct 22 j 15:38	5° $\mathbb{M}$ 27'32	2°09'45
minimum elong	1153 Aug 07 j 18:44	21° $\mathfrak{Q}$ 06'47	1°17'59	minimum elong	1159 Oct 22 j 15:39	5° $\mathbb{M}$ 27'32	2°09'44
max. Earth dist.	1153 Aug 08 j 00:39	21° $\mathfrak{Q}$ 08'39	10.30082 AU	max. Earth dist.	1159 Oct 22 j 12:44	5° $\mathbb{M}$ 26'40	10.93967 AU
morning rise	1153 Aug 25 j 11:25	23° $\mathfrak{Q}$ 20'07		morning rise	1159 Nov 08 j 07:14	7° $\mathbb{M}$ 25'36	
	1153 Oct 31 j 23:58	0° $\mathbb{M}$		retrograde	1160 Feb 15 j 15:04	14° $\mathbb{M}$ 26'20	
retrograde	1153 Dec 04 j 20:29	1° $\mathbb{M}$ 01'59		opposition	1160 Apr 25 j 00:08	11° $\mathbb{M}$ 08'50	2°32'28
	1154 Jan 08 j 02:16	30° $\mathbb{R}$ $\mathfrak{Q}$		min. Earth dist.	1160 Apr 25 j 02:38	11° $\mathbb{M}$ 08'22	8.97690 AU
opposition	1154 Feb 09 j 17:45	27° $\mathfrak{Q}$ 38'21	1°51'48	direct	1160 Jul 05 j 05:52	7° $\mathbb{M}$ 47'10	
min. Earth dist.	1154 Feb 09 j 13:53	27° $\mathfrak{Q}$ 39'08	8.35585 AU	evening set	1160 Oct 16 j 14:01	14° $\mathbb{M}$ 59'39	
direct	1154 Apr 19 j 17:20	24° $\mathfrak{Q}$ 09'54			1160 Oct 16 j 15:15	15° $\mathbb{M}$	
	1154 Jul 17 j 04:33	0° $\mathbb{M}$					



conjunction	1160 Nov 02 j 06:54	16° $\mathbb{M}$ 57'22	1°58'15	max. Earth dist.	1167 Jan 08 j 06:08	24° $\mathfrak{Z}$ 54'34	10.94670 AU
minimum elong	1160 Nov 02 j 06:56	16° $\mathbb{M}$ 57'23	1°58'14	morning rise	1167 Jan 25 j 07:08	26° $\mathfrak{Z}$ 55'46	
max. Earth dist.	1160 Nov 02 j 03:15	16° $\mathbb{M}$ 56'18	11.00652 AU		1167 Feb 22 j 05:40	0° $\approx$	
morning rise	1160 Nov 18 j 20:59	18° $\mathbb{M}$ 54'19		retrograde	1167 May 08 j 05:47	4° $\approx$ 10'18	
retrograde	1161 Feb 26 j 09:14	25° $\mathbb{M}$ 52'32		opposition	1167 Jul 18 j 01:53	0° $\approx$ 49'53	0°-42'-4
opposition	1161 May 07 j 03:41	22° $\mathbb{M}$ 35'22	2°15'22	min. Earth dist.	1167 Jul 18 j 07:50	0° $\approx$ 48'46	8.90566 AU
min. Earth dist.	1161 May 07 j 06:27	22° $\mathbb{M}$ 34'52	9.03355 AU		1167 Jul 29 j 08:09	30° $\mathbb{R}$ $\mathfrak{Z}$	
direct	1161 Jul 17 j 11:36	19° $\mathbb{M}$ 14'49		direct	1167 Sep 25 j 17:46	27° $\mathfrak{Z}$ 31'29	
evening set	1161 Oct 28 j 02:20	26° $\mathbb{M}$ 22'12			1167 Nov 20 j 04:54	0° $\approx$	
				evening set	1168 Jan 03 j 13:54	4° $\approx$ 37'04	
conjunction	1161 Nov 13 j 17:53	28° $\mathbb{M}$ 19'04	1°42'10	conjunction	1168 Jan 20 j 07:03	6° $\approx$ 36'56	0°-47'-34
minimum elong	1161 Nov 13 j 17:56	28° $\mathbb{M}$ 19'05	1°42'10	minimum elong	1168 Jan 20 j 07:02	6° $\approx$ 36'55	0°47'35
max. Earth dist.	1161 Nov 13 j 14:04	28° $\mathbb{M}$ 17'56	11.05294 AU	max. Earth dist.	1168 Jan 19 j 23:15	6° $\approx$ 34'35	10.86053 AU
	1161 Nov 28 j 02:06	0° $\mathfrak{A}$		morning rise	1168 Feb 06 j 03:08	8° $\approx$ 37'41	
morning rise	1161 Nov 30 j 07:10	0° $\mathfrak{A}$ 15'20			1168 Apr 14 j 14:04	15° $\approx$	
retrograde	1162 Mar 10 j 03:51	7° $\mathfrak{A}$ 12'27		retrograde	1168 May 19 j 20:16	16° $\approx$ 00'07	
opposition	1162 May 19 j 05:31	3° $\mathfrak{A}$ 55'25	1°53'10		1168 Jun 24 j 17:54	15° $\mathbb{R}$ $\approx$	
min. Earth dist.	1162 May 19 j 09:17	3° $\mathfrak{A}$ 54'43	9.06881 AU	opposition	1168 Jul 29 j 14:56	12° $\approx$ 38'21	-1°-14'-32
direct	1162 Jul 29 j 11:31	0° $\mathfrak{A}$ 35'49		min. Earth dist.	1168 Jul 29 j 21:06	12° $\approx$ 37'11	8.81101 AU
evening set	1162 Nov 08 j 11:16	7° $\mathfrak{A}$ 39'18		direct	1168 Oct 06 j 18:59	9° $\approx$ 19'26	
					1169 Jan 01 j 15:06	15° $\approx$	
conjunction	1162 Nov 25 j 01:56	9° $\mathfrak{A}$ 35'43	1°22'13	evening set	1169 Jan 14 j 12:56	16° $\approx$ 30'03	
minimum elong	1162 Nov 25 j 01:58	9° $\mathfrak{A}$ 35'44	1°22'14				
max. Earth dist.	1162 Nov 24 j 20:47	9° $\mathfrak{A}$ 34'12	11.07734 AU	conjunction	1169 Jan 31 j 07:52	18° $\approx$ 31'40	-1°-13'-1
morning rise	1162 Dec 11 j 15:12	11° $\mathfrak{A}$ 31'48		minimum elong	1169 Jan 31 j 07:50	18° $\approx$ 31'39	1°13'01
retrograde	1163 Mar 21 j 20:44	18° $\mathfrak{A}$ 29'19		max. Earth dist.	1169 Jan 31 j 01:02	18° $\approx$ 29'35	10.75830 AU
opposition	1163 May 31 j 06:59	15° $\mathfrak{A}$ 12'08	1°26'44	morning rise	1169 Feb 17 j 06:17	20° $\approx$ 34'22	
min. Earth dist.	1163 May 31 j 12:03	15° $\mathfrak{A}$ 11'12	9.08154 AU	retrograde	1169 Jun 01 j 19:18	28° $\approx$ 05'47	
direct	1163 Aug 10 j 08:14	11° $\mathfrak{A}$ 53'16		opposition	1169 Aug 11 j 08:58	24° $\approx$ 42'30	-1°-44'-31
evening set	1163 Nov 19 j 18:16	18° $\mathfrak{A}$ 54'12		min. Earth dist.	1169 Aug 11 j 14:07	24° $\approx$ 41'32	8.70268 AU
				direct	1169 Oct 19 j 01:54	21° $\approx$ 22'49	
conjunction	1163 Dec 06 j 08:32	20° $\mathfrak{A}$ 50'34	0°59'09	evening set	1170 Jan 26 j 19:51	28° $\approx$ 39'46	
minimum elong	1163 Dec 06 j 08:33	20° $\mathfrak{A}$ 50'34	0°59'10		1170 Feb 06 j 19:38	0° $\mathfrak{H}$	
max. Earth dist.	1163 Dec 06 j 02:05	20° $\mathfrak{A}$ 48'40	11.07892 AU	conjunction	1170 Feb 12 j 16:57	0° $\mathfrak{H}$ 43'26	-1°-35'-43
morning rise	1163 Dec 22 j 22:27	22° $\mathfrak{A}$ 46'49		minimum elong	1170 Feb 12 j 16:54	0° $\mathfrak{H}$ 43'25	1°35'44
retrograde	1164 Apr 01 j 16:48	29° $\mathfrak{A}$ 46'21		max. Earth dist.	1170 Feb 12 j 11:41	0° $\mathfrak{H}$ 41'49	10.64463 AU
opposition	1164 Jun 11 j 08:49	26° $\mathfrak{A}$ 28'43	0°56'58	morning rise	1170 Mar 01 j 17:54	2° $\mathfrak{H}$ 48'20	
min. Earth dist.	1164 Jun 11 j 14:32	26° $\mathfrak{A}$ 27'40	9.07128 AU	retrograde	1170 Jun 15 j 03:01	10° $\mathfrak{H}$ 29'23	
direct	1164 Aug 21 j 05:44	23° $\mathfrak{A}$ 10'20		opposition	1170 Aug 24 j 08:30	7° $\mathfrak{H}$ 04'34	-2°-10'-30
	1164 Nov 28 j 13:55	0° $\mathfrak{Z}$		min. Earth dist.	1170 Aug 24 j 12:05	7° $\mathfrak{H}$ 03'52	8.58564 AU
evening set	1164 Nov 30 j 01:08	0° $\mathfrak{Z}$ 10'08		direct	1170 Oct 31 j 11:51	3° $\mathfrak{H}$ 43'56	
				evening set	1171 Feb 08 j 11:48	11° $\mathfrak{H}$ 08'18	
conjunction	1164 Dec 16 j 15:39	2° $\mathfrak{Z}$ 06'50	0°33'45	conjunction	1171 Feb 25 j 11:29	13° $\mathfrak{H}$ 14'14	-1°-54'-28
minimum elong	1164 Dec 16 j 15:40	2° $\mathfrak{Z}$ 06'50	0°33'45	minimum elong	1171 Feb 25 j 11:27	13° $\mathfrak{H}$ 14'13	1°54'29
max. Earth dist.	1164 Dec 16 j 09:12	2° $\mathfrak{Z}$ 04'56	11.05744 AU	max. Earth dist.	1171 Feb 25 j 07:29	13° $\mathfrak{H}$ 12'59	10.52494 AU
morning rise	1165 Jan 02 j 06:33	4° $\mathfrak{Z}$ 03'41		morning rise	1171 Mar 14 j 15:30	15° $\mathfrak{H}$ 21'35	
retrograde	1165 Apr 13 j 15:55	11° $\mathfrak{Z}$ 06'41		retrograde	1171 Jun 28 j 17:29	23° $\mathfrak{H}$ 12'30	
opposition	1165 Jun 23 j 11:43	7° $\mathfrak{Z}$ 48'20	0°24'52	opposition	1171 Sep 06 j 14:03	19° $\mathfrak{H}$ 46'08	-2°-30'-56
min. Earth dist.	1165 Jun 23 j 17:07	7° $\mathfrak{Z}$ 47'21	9.03807 AU	min. Earth dist.	1171 Sep 06 j 16:14	19° $\mathfrak{H}$ 45'43	8.46547 AU
direct	1165 Sep 02 j 00:56	4° $\mathfrak{Z}$ 30'13		direct	1171 Nov 13 j 05:00	16° $\mathfrak{H}$ 24'22	
evening set	1165 Dec 11 j 09:33	11° $\mathfrak{Z}$ 30'21		evening set	1172 Feb 21 j 13:33	23° $\mathfrak{H}$ 56'58	
conjunction	1165 Dec 28 j 00:43	13° $\mathfrak{Z}$ 27'46	0°06'54	conjunction	1172 Mar 09 j 16:22	26° $\mathfrak{H}$ 05'25	-2°-8'-1
minimum elong	1165 Dec 28 j 00:43	13° $\mathfrak{Z}$ 27'46	0°06'54	minimum elong	1172 Mar 09 j 16:21	26° $\mathfrak{H}$ 05'25	2°08'01
behind sun begin	1165 Dec 27 j 18:14	13° $\mathfrak{Z}$ 25'52		max. Earth dist.	1172 Mar 09 j 13:13	26° $\mathfrak{H}$ 04'26	10.40502 AU
behind sun end	1165 Dec 28 j 07:13	13° $\mathfrak{Z}$ 29'40		morning rise	1172 Mar 26 j 23:59	28° $\mathfrak{H}$ 15'23	
max. Earth dist.	1165 Dec 27 j 18:27	13° $\mathfrak{Z}$ 25'56	11.01308 AU		1172 Apr 10 j 11:35	0° $\mathbb{Y}$	
morning rise	1166 Jan 13 j 16:54	15° $\mathfrak{Z}$ 25'33		retrograde	1172 Jul 11 j 15:26	6° $\mathbb{Y}$ 15'49	
desc. node	1166 Apr 01 j 02:28	22° $\mathfrak{Z}$ 03'56		opposition	1172 Sep 19 j 01:34	2° $\mathbb{Y}$ 48'03	-2°-44'-18
retrograde	1166 Apr 25 j 20:22	22° $\mathfrak{Z}$ 33'35		min. Earth dist.	1172 Sep 19 j 02:55	2° $\mathbb{Y}$ 47'47	8.34798 AU
opposition	1166 Jul 05 j 17:05	19° $\mathfrak{Z}$ 14'17	0°-8'-30		1172 Oct 30 j 17:03	30° $\mathbb{R}$ $\mathfrak{H}$	
min. Earth dist.	1166 Jul 05 j 22:30	19° $\mathfrak{Z}$ 13'17	8.98239 AU	direct	1172 Nov 25 j 05:38	29° $\mathfrak{H}$ 25'02	
direct	1166 Sep 13 j 21:03	15° $\mathfrak{Z}$ 56'09			1172 Dec 20 j 11:41	0° $\mathbb{Y}$	
evening set	1166 Dec 22 j 21:15	22° $\mathfrak{Z}$ 58'12		evening set	1173 Mar 06 j 01:36	7° $\mathbb{Y}$ 06'17	
conjunction	1167 Jan 08 j 13:13	24° $\mathfrak{Z}$ 56'40	0°-20'-36				
minimum elong	1167 Jan 08 j 13:12	24° $\mathfrak{Z}$ 56'40	0°20'37				



conjunction	1173 Mar 23 j 08:14	9°Υ17'24	-2°-15'-14		1179 May 22 j 16:07	0°☾	
minimum elong	1173 Mar 23 j 08:13	9°Υ17'24	2°15'14	evening set	1179 Jun 01 j 04:59	1°☾11'55	
max. Earth dist.	1173 Mar 23 j 06:33	9°Υ16'52	10.29081 AU				
morning rise	1173 Apr 09 j 19:46	11°Υ30'04		conjunction	1179 Jun 19 j 09:48	3°☾33'13	0°-30'-18
retrograde	1173 Jul 25 j 20:20	19°Υ38'59		minimum elong	1179 Jun 19 j 09:49	3°☾33'13	0°30'20
opposition	1173 Oct 02 j 18:36	16°Υ10'04	-2°-49'-13	max. Earth dist.	1179 Jun 19 j 17:23	3°☾35'41	10.02448 AU
min. Earth dist.	1173 Oct 02 j 18:55	16°Υ10'00	8.23917 AU	morning rise	1179 Jul 07 j 14:17	5°☾54'22	
direct	1173 Dec 08 j 13:20	12°Υ45'43		retrograde	1179 Oct 20 j 01:13	14°☾06'26	
evening set	1174 Mar 19 j 23:45	20°Υ35'35		opposition	1179 Dec 25 j 15:41	10°☾38'00	0°-17'-13
				min. Earth dist.	1179 Dec 25 j 09:56	10°☾39'11	8.04698 AU
conjunction	1174 Apr 06 j 10:48	22°Υ49'25	-2°-15'-14	direct	1180 Mar 01 j 19:06	7°☾08'21	
minimum elong	1174 Apr 06 j 10:49	22°Υ49'25	2°15'15	asc. node	1180 May 30 j 16:23	13°☾26'30	
max. Earth dist.	1174 Apr 06 j 11:16	22°Υ49'34	10.18845 AU	evening set	1180 Jun 15 j 07:38	15°☾22'24	
morning rise	1174 Apr 24 j 02:29	25°Υ04'43					
	1174 Jun 06 j 08:23	0°♄		conjunction	1180 Jul 03 j 12:03	17°☾42'44	0°03'02
retrograde	1174 Aug 09 j 06:07	3°♄20'31		minimum elong	1180 Jul 03 j 12:03	17°☾42'44	0°03'01
	1174 Oct 14 j 18:56	30°♄Υ		behind sun begin	1180 Jul 03 j 04:43	17°☾40'23	
opposition	1174 Oct 16 j 16:45	29°Υ50'42	-2°-44'-46	behind sun end	1180 Jul 03 j 19:23	17°☾45'05	
min. Earth dist.	1174 Oct 16 j 15:33	29°Υ50'56	8.14505 AU	max. Earth dist.	1180 Jul 03 j 19:25	17°☾45'05	10.07637 AU
direct	1174 Dec 22 j 05:38	26°Υ25'04		morning rise	1180 Jul 21 j 14:54	20°☾02'31	
	1175 Feb 24 j 16:03	0°♄		retrograde	1180 Nov 02 j 02:33	28°☾07'00	
evening set	1175 Apr 03 j 07:21	4°♄22'55		opposition	1181 Jan 07 j 16:22	24°☾39'53	0°24'08
				min. Earth dist.	1181 Jan 07 j 10:29	24°☾41'05	8.11167 AU
conjunction	1175 Apr 20 j 23:12	6°♄39'21	-2°-7'-33	direct	1181 Mar 16 j 07:44	21°☾10'18	
minimum elong	1175 Apr 20 j 23:14	6°♄39'22	2°07'33	evening set	1181 Jun 30 j 05:42	29°☾21'28	
max. Earth dist.	1175 Apr 21 j 02:12	6°♄40'19	10.10378 AU		1181 Jul 05 j 07:42	0°♄	
morning rise	1175 May 08 j 19:02	8°♄57'05					
	1175 Jul 03 j 00:32	15°♄		conjunction	1181 Jul 18 j 08:00	1°♄39'58	0°35'40
retrograde	1175 Aug 23 j 19:41	17°♄17'31		minimum elong	1181 Jul 18 j 07:59	1°♄39'57	0°35'39
	1175 Oct 15 j 16:15	15°♄♄		max. Earth dist.	1181 Jul 18 j 15:17	1°♄42'18	10.15311 AU
opposition	1175 Oct 30 j 18:55	13°♄47'09	-2°-30'-34	morning rise	1181 Aug 05 j 07:36	3°♄57'33	
min. Earth dist.	1175 Oct 30 j 15:53	13°♄47'46	8.07107 AU	retrograde	1181 Nov 15 j 21:03	11°♄53'22	
direct	1176 Jan 05 j 04:35	10°♄20'20		opposition	1182 Jan 21 j 12:36	8°♄27'43	1°03'20
	1176 Mar 19 j 15:25	15°♄		min. Earth dist.	1182 Jan 21 j 06:28	8°♄28'58	8.19917 AU
evening set	1176 Apr 16 j 23:31	18°♄25'04		direct	1182 Mar 30 j 16:36	4°♄58'32	
				evening set	1182 Jul 14 j 20:57	13°♄04'58	
conjunction	1176 May 04 j 20:03	20°♄43'46	-1°-52'-12		1182 Jul 30 j 01:47	15°♄	
minimum elong	1176 May 04 j 20:06	20°♄43'47	1°52'13				
max. Earth dist.	1176 May 05 j 01:07	20°♄45'25	10.04187 AU	conjunction	1182 Aug 01 j 19:47	15°♄21'00	1°05'44
morning rise	1176 May 22 j 19:40	23°♄03'30		minimum elong	1182 Aug 01 j 19:45	15°♄20'59	1°05'44
	1176 Jul 28 j 07:18	0°♄		max. Earth dist.	1182 Aug 02 j 02:53	15°♄23'15	10.24991 AU
retrograde	1176 Sep 06 j 11:31	1°♄25'51		morning rise	1182 Aug 19 j 14:53	17°♄35'49	
	1176 Oct 17 j 00:38	30°♄♄		retrograde	1182 Nov 29 j 08:53	25°♄22'22	
opposition	1176 Nov 12 j 23:42	27°♄55'22	-2°-7'-5	opposition	1183 Feb 04 j 03:26	21°♄58'14	1°38'05
min. Earth dist.	1176 Nov 12 j 19:09	27°♄56'18	8.02183 AU	min. Earth dist.	1183 Feb 03 j 21:32	21°♄59'25	8.30405 AU
direct	1177 Jan 18 j 08:40	24°♄27'29		direct	1183 Apr 13 j 20:36	18°♄29'43	
	1177 Apr 10 j 14:31	0°♄		evening set	1183 Jul 29 j 03:27	26°♄29'59	
evening set	1177 May 01 j 22:12	2°♄37'34					
				conjunction	1183 Aug 15 j 21:49	28°♄43'06	1°31'37
conjunction	1177 May 19 j 22:44	4°♄57'58	-1°-29'-54	minimum elong	1183 Aug 15 j 21:46	28°♄43'05	1°31'36
minimum elong	1177 May 19 j 22:48	4°♄57'59	1°29'55	max. Earth dist.	1183 Aug 16 j 04:21	28°♄45'09	10.36088 AU
max. Earth dist.	1177 May 20 j 05:14	5°♄00'05	10.00671 AU		1183 Aug 26 j 02:54	0°♄	
morning rise	1177 Jun 07 j 01:21	7°♄19'03		morning rise	1183 Sep 02 j 11:39	0°♄54'48	
retrograde	1177 Sep 21 j 03:40	15°♄40'32		retrograde	1183 Dec 12 j 11:51	8°♄32'03	
opposition	1177 Nov 27 j 05:55	12°♄10'20	-1°-35'-33	opposition	1184 Feb 17 j 12:48	5°♄09'26	2°06'42
min. Earth dist.	1177 Nov 27 j 00:27	12°♄11'28	8.00066 AU	min. Earth dist.	1184 Feb 17 j 07:49	5°♄10'26	8.42006 AU
direct	1178 Feb 01 j 16:48	8°♄41'35		direct	1184 Apr 26 j 19:24	1°♄41'49	
evening set	1178 May 17 j 00:48	16°♄55'05		evening set	1184 Aug 10 j 23:45	9°♄34'49	
conjunction	1178 Jun 04 j 04:15	19°♄16'23	-1°-1'-59	conjunction	1184 Aug 28 j 13:02	11°♄44'48	1°52'08
minimum elong	1178 Jun 04 j 04:18	19°♄16'24	1°02'01	minimum elong	1184 Aug 28 j 12:59	11°♄44'47	1°52'08
max. Earth dist.	1178 Jun 04 j 11:38	19°♄18'48	10.00076 AU	max. Earth dist.	1184 Aug 28 j 18:25	11°♄46'29	10.47965 AU
morning rise	1178 Jun 22 j 08:36	21°♄37'59		morning rise	1184 Sep 14 j 21:27	13°♄53'20	
retrograde	1178 Oct 05 j 17:22	29°♄55'56		retrograde	1184 Dec 24 j 07:05	21°♄21'40	
opposition	1178 Dec 11 j 11:49	26°♄26'26	0°-58'-4	opposition	1185 Mar 01 j 16:19	18°♄00'29	2°28'06
min. Earth dist.	1178 Dec 11 j 06:00	26°♄27'38	8.00918 AU	min. Earth dist.	1185 Mar 01 j 13:04	18°♄01'07	8.54073 AU
direct	1179 Feb 16 j 05:19	22°♄57'04		direct	1185 May 10 j 11:24	14°♄33'54	



evening set	1185 Aug 24 j 09:21	22° $\mathbb{M}$ 18'59		min. Earth dist.	1191 May 14 j 15:28	29° $\mathbb{M}$ 18'35	9.04735 AU
				direct	1191 Jul 24 j 16:54	25° $\mathbb{M}$ 59'26	
conjunction	1185 Sep 10 j 17:30	24° $\mathbb{M}$ 25'55	2°06'39		1191 Oct 06 j 11:25	0° $\mathbb{Z}$	
minimum elong	1185 Sep 10 j 17:28	24° $\mathbb{M}$ 25'55	2°06'39	evening set	1191 Nov 04 j 00:04	3° $\mathbb{Z}$ 05'06	
max. Earth dist.	1185 Sep 10 j 20:32	24° $\mathbb{M}$ 26'51	10.59974 AU				
morning rise	1185 Sep 27 j 20:55	26° $\mathbb{M}$ 31'25		conjunction	1191 Nov 20 j 15:04	5° $\mathbb{Z}$ 01'48	1°31'09
	1185 Oct 28 j 19:59	0° $\mathbb{A}$		minimum elong	1191 Nov 20 j 15:07	5° $\mathbb{Z}$ 01'49	1°31'09
retrograde	1186 Jan 05 j 19:25	3° $\mathbb{A}$ 51'33		max. Earth dist.	1191 Nov 20 j 08:38	4° $\mathbb{Z}$ 59'54	11.05832 AU
opposition	1186 Mar 14 j 13:54	0° $\mathbb{A}$ 31'37	2°41'49	morning rise	1191 Dec 07 j 04:27	6° $\mathbb{Z}$ 58'04	
min. Earth dist.	1186 Mar 14 j 12:23	0° $\mathbb{A}$ 31'55	8.65943 AU	retrograde	1192 Mar 16 j 05:01	13° $\mathbb{Z}$ 55'49	
	1186 Mar 21 j 09:53	30° $\mathbb{R}$ $\mathbb{M}$		opposition	1192 May 25 j 12:10	10° $\mathbb{Z}$ 38'29	1°38'29
direct	1186 May 23 j 19:41	27° $\mathbb{M}$ 06'11		min. Earth dist.	1192 May 25 j 17:24	10° $\mathbb{Z}$ 37'31	9.06535 AU
	1186 Jul 23 j 23:02	0° $\mathbb{A}$		direct	1192 Aug 04 j 16:34	7° $\mathbb{Z}$ 19'00	
evening set	1186 Sep 06 j 08:16	4° $\mathbb{A}$ 43'10		evening set	1192 Nov 14 j 07:53	14° $\mathbb{Z}$ 21'30	
conjunction	1186 Sep 23 j 11:46	6° $\mathbb{A}$ 47'20	2°14'53	conjunction	1192 Nov 30 j 22:32	16° $\mathbb{Z}$ 18'01	1°09'19
minimum elong	1186 Sep 23 j 11:44	6° $\mathbb{A}$ 47'20	2°14'54	minimum elong	1192 Nov 30 j 22:34	16° $\mathbb{Z}$ 18'02	1°09'19
max. Earth dist.	1186 Sep 23 j 12:13	6° $\mathbb{A}$ 47'28	10.71464 AU	max. Earth dist.	1192 Nov 30 j 16:18	16° $\mathbb{Z}$ 16'11	11.06538 AU
morning rise	1186 Oct 10 j 10:47	8° $\mathbb{A}$ 50'09		morning rise	1192 Dec 17 j 12:08	18° $\mathbb{Z}$ 14'19	
retrograde	1187 Jan 17 j 23:42	16° $\mathbb{A}$ 03'07		retrograde	1193 Mar 28 j 01:36	25° $\mathbb{Z}$ 13'24	
opposition	1187 Mar 27 j 06:12	12° $\mathbb{A}$ 44'16	2°47'47	opposition	1193 Jun 06 j 13:59	21° $\mathbb{Z}$ 55'34	1°10'02
min. Earth dist.	1187 Mar 27 j 06:01	12° $\mathbb{A}$ 44'18	8.76965 AU	min. Earth dist.	1193 Jun 06 j 19:29	21° $\mathbb{Z}$ 54'33	9.06076 AU
direct	1187 Jun 05 j 22:38	9° $\mathbb{A}$ 20'01		direct	1193 Aug 16 j 14:12	18° $\mathbb{Z}$ 36'30	
evening set	1187 Sep 18 j 21:15	16° $\mathbb{A}$ 49'13		evening set	1193 Nov 25 j 15:00	25° $\mathbb{Z}$ 37'15	
conjunction	1187 Oct 05 j 20:46	18° $\mathbb{A}$ 50'59	2°16'55	conjunction	1193 Dec 12 j 05:34	27° $\mathbb{Z}$ 33'59	0°44'48
minimum elong	1187 Oct 05 j 20:46	18° $\mathbb{A}$ 50'59	2°16'55	minimum elong	1193 Dec 12 j 05:35	27° $\mathbb{Z}$ 33'59	0°44'48
max. Earth dist.	1187 Oct 05 j 19:31	18° $\mathbb{A}$ 50'37	10.81841 AU	max. Earth dist.	1193 Dec 11 j 22:37	27° $\mathbb{Z}$ 31'56	11.04985 AU
morning rise	1187 Oct 22 j 16:04	20° $\mathbb{A}$ 51'32		morning rise	1193 Dec 28 j 20:00	29° $\mathbb{Z}$ 30'44	
retrograde	1188 Jan 30 j 01:34	27° $\mathbb{A}$ 58'43			1194 Jan 02 j 02:05	0° $\mathbb{Z}$	
opposition	1188 Apr 07 j 17:56	24° $\mathbb{A}$ 40'43	2°46'19	retrograde	1194 Apr 08 j 22:44	6° $\mathbb{Z}$ 32'39	
min. Earth dist.	1188 Apr 07 j 18:45	24° $\mathbb{A}$ 40'34	8.86632 AU	opposition	1194 Jun 18 j 16:37	3° $\mathbb{Z}$ 14'05	0°38'46
direct	1188 Jun 17 j 18:07	21° $\mathbb{A}$ 17'42		min. Earth dist.	1194 Jun 18 j 22:59	3° $\mathbb{Z}$ 12'54	9.03386 AU
evening set	1188 Sep 30 j 01:30	28° $\mathbb{A}$ 39'41			1194 Aug 18 j 12:35	30° $\mathbb{R}$ $\mathbb{Z}$	
	1188 Oct 11 j 09:27	0° $\mathbb{M}$		direct	1194 Aug 28 j 08:48	29° $\mathbb{Z}$ 55'15	
					1194 Sep 07 j 05:13	0° $\mathbb{Z}$	
conjunction	1188 Oct 16 j 21:52	0° $\mathbb{M}$ 39'31	2°13'01	evening set	1194 Dec 06 j 22:55	6° $\mathbb{Z}$ 55'46	
minimum elong	1188 Oct 16 j 21:53	0° $\mathbb{M}$ 39'31	2°13'01				
max. Earth dist.	1188 Oct 16 j 19:43	0° $\mathbb{M}$ 38'53	10.90705 AU	conjunction	1194 Dec 23 j 13:45	8° $\mathbb{Z}$ 53'03	0°18'25
morning rise	1188 Nov 02 j 14:17	2° $\mathbb{M}$ 38'16		minimum elong	1194 Dec 23 j 13:45	8° $\mathbb{Z}$ 53'03	0°18'25
retrograde	1189 Feb 10 j 00:10	9° $\mathbb{M}$ 40'59		max. Earth dist.	1194 Dec 23 j 05:51	8° $\mathbb{Z}$ 50'43	11.01239 AU
opposition	1189 Apr 20 j 02:00	6° $\mathbb{M}$ 23'35	2°37'56	morning rise	1195 Jan 09 j 05:32	10° $\mathbb{Z}$ 50'38	
min. Earth dist.	1189 Apr 20 j 04:26	6° $\mathbb{M}$ 23'08	8.94633 AU	retrograde	1195 Apr 20 j 23:30	17° $\mathbb{Z}$ 56'59	
direct	1189 Jun 30 j 05:14	3° $\mathbb{M}$ 01'43		opposition	1195 Jun 30 j 21:19	14° $\mathbb{Z}$ 37'29	0°05'45
evening set	1189 Oct 11 j 22:21	10° $\mathbb{M}$ 17'14		min. Earth dist.	1195 Jul 01 j 03:55	14° $\mathbb{Z}$ 36'15	8.98565 AU
				desc. node	1195 Sep 03 j 08:31	11° $\mathbb{Z}$ 20'24	
conjunction	1189 Oct 28 j 16:14	12° $\mathbb{M}$ 15'35	2°03'42	direct	1195 Sep 09 j 05:25	11° $\mathbb{Z}$ 18'40	
minimum elong	1189 Oct 28 j 16:15	12° $\mathbb{M}$ 15'36	2°03'41	evening set	1195 Dec 18 j 09:08	18° $\mathbb{Z}$ 20'28	
max. Earth dist.	1189 Oct 28 j 12:19	12° $\mathbb{M}$ 14'26	10.97791 AU				
morning rise	1189 Nov 14 j 06:50	14° $\mathbb{M}$ 13'04		conjunction	1196 Jan 04 j 00:47	20° $\mathbb{Z}$ 18'41	0°-8'-59
	1189 Nov 21 j 02:17	15° $\mathbb{M}$		minimum elong	1196 Jan 04 j 00:46	20° $\mathbb{Z}$ 18'41	0°09'01
retrograde	1190 Feb 21 j 18:01	21° $\mathbb{M}$ 12'40		behind sun begin	1196 Jan 03 j 18:47	20° $\mathbb{Z}$ 16'55	
opposition	1190 May 02 j 07:09	17° $\mathbb{M}$ 55'36	2°23'18	behind sun end	1196 Jan 04 j 06:46	20° $\mathbb{Z}$ 20'27	
min. Earth dist.	1190 May 02 j 11:23	17° $\mathbb{M}$ 54'49	9.00729 AU	max. Earth dist.	1196 Jan 03 j 17:31	20° $\mathbb{Z}$ 16'32	10.95423 AU
	1190 Jun 19 j 10:03	15° $\mathbb{R}$ $\mathbb{M}$		morning rise	1196 Jan 20 j 18:07	22° $\mathbb{Z}$ 17'25	
direct	1190 Jul 12 j 12:59	14° $\mathbb{M}$ 34'40		retrograde	1196 May 02 j 07:03	29° $\mathbb{Z}$ 29'44	
	1190 Aug 04 j 12:03	15° $\mathbb{M}$		opposition	1196 Jul 12 j 04:52	26° $\mathbb{Z}$ 09'06	0°-27'-56
evening set	1190 Oct 23 j 13:26	21° $\mathbb{M}$ 44'44		min. Earth dist.	1196 Jul 12 j 10:39	26° $\mathbb{Z}$ 08'01	8.91774 AU
				direct	1196 Sep 20 j 03:18	22° $\mathbb{Z}$ 50'09	
conjunction	1190 Nov 09 j 05:27	23° $\mathbb{M}$ 42'02	1°49'31	evening set	1196 Dec 28 j 23:41	29° $\mathbb{Z}$ 54'45	
minimum elong	1190 Nov 09 j 05:29	23° $\mathbb{M}$ 42'03	1°49'31		1196 Dec 29 j 17:33	0° $\approx$	
max. Earth dist.	1190 Nov 08 j 23:35	23° $\mathbb{M}$ 40'18	11.02884 AU				
morning rise	1190 Nov 25 j 19:08	25° $\mathbb{M}$ 38'41		conjunction	1197 Jan 14 j 16:33	1° $\approx$ 54'13	0°-36'-18
	1191 Jan 06 j 23:55	0° $\mathbb{Z}$		minimum elong	1197 Jan 14 j 16:31	1° $\approx$ 54'13	0°36'19
retrograde	1191 Mar 05 j 11:39	2° $\mathbb{Z}$ 36'36		max. Earth dist.	1197 Jan 14 j 10:22	1° $\approx$ 52'22	10.87726 AU
	1191 May 05 j 05:40	30° $\mathbb{R}$ $\mathbb{M}$		morning rise	1197 Jan 31 j 11:40	3° $\approx$ 54'27	
opposition	1191 May 14 j 10:11	29° $\mathbb{M}$ 19'34	2°03'13	retrograde	1197 May 14 j 20:09	11° $\approx$ 14'02	



opposition	1197 Jul 24 j 16:03	7° $\approx$ 52'09	-1°-1'-4	opposition	1203 Oct 11 j 05:55	24° $\Upsilon$ 20'35	-2°-47'-35
min. Earth dist.	1197 Jul 24 j 20:47	7° $\approx$ 51'16	8.83244 AU	min. Earth dist.	1203 Oct 11 j 03:32	24° $\Upsilon$ 21'04	8.19094 AU
direct	1197 Oct 02 j 02:34	4° $\approx$ 32'52		direct	1203 Dec 16 j 19:36	20° $\Upsilon$ 56'02	
evening set	1198 Jan 09 j 20:06	11° $\approx$ 41'49		evening set	1204 Mar 27 j 16:08	28° $\Upsilon$ 50'32	
					1204 Apr 05 j 17:49	0° $\mathcal{B}$	
conjunction	1198 Jan 26 j 14:21	13° $\approx$ 42'51	-1°-2'-33	conjunction	1204 Apr 14 j 05:47	1° $\mathcal{B}$ 05'47	-2°-11'-33
minimum elong	1198 Jan 26 j 14:19	13° $\approx$ 42'50	1°02'33	minimum elong	1204 Apr 14 j 05:49	1° $\mathcal{B}$ 05'48	2°11'34
max. Earth dist.	1198 Jan 26 j 08:26	13° $\approx$ 41'03	10.78430 AU	max. Earth dist.	1204 Apr 14 j 08:45	1° $\mathcal{B}$ 06'45	10.14769 AU
	1198 Feb 06 j 05:30	15° $\approx$		morning rise	1204 May 01 j 23:48	3° $\mathcal{B}$ 22'26	
morning rise	1198 Feb 12 j 11:41	15° $\approx$ 44'52		retrograde	1204 Aug 17 j 04:03	11° $\mathcal{B}$ 41'00	
retrograde	1198 May 27 j 16:56	23° $\approx$ 12'54		opposition	1204 Oct 24 j 06:48	8° $\mathcal{B}$ 11'25	-2°-37'-25
opposition	1198 Aug 06 j 08:10	19° $\approx$ 49'42	-1°-32'-18	min. Earth dist.	1204 Oct 24 j 03:40	8° $\mathcal{B}$ 12'03	8.11241 AU
min. Earth dist.	1198 Aug 06 j 12:23	19° $\approx$ 48'54	8.73301 AU	direct	1204 Dec 29 j 16:06	4° $\mathcal{B}$ 45'42	
direct	1198 Oct 14 j 05:47	16° $\approx$ 29'53		evening set	1205 Apr 11 j 05:04	12° $\mathcal{B}$ 47'22	
evening set	1199 Jan 21 j 23:42	23° $\approx$ 44'31					
conjunction	1199 Feb 07 j 19:43	25° $\approx$ 47'26	-1°-26'-34	conjunction	1205 Apr 28 j 23:20	15° $\mathcal{B}$ 04'59	-1°-59'-20
minimum elong	1199 Feb 07 j 19:40	25° $\approx$ 47'25	1°26'34	minimum elong	1205 Apr 28 j 23:24	15° $\mathcal{B}$ 05'00	1°59'21
max. Earth dist.	1199 Feb 07 j 14:07	25° $\approx$ 45'43	10.67911 AU		1205 Apr 28 j 08:01	15° $\mathcal{B}$	
morning rise	1199 Feb 24 j 19:39	27° $\approx$ 51'32		max. Earth dist.	1205 Apr 29 j 03:20	15° $\mathcal{B}$ 06'17	10.07966 AU
	1199 Mar 15 j 06:49	0° $\mathcal{H}$		morning rise	1205 May 16 j 21:24	17° $\mathcal{B}$ 23'46	
retrograde	1199 Jun 09 j 20:46	5° $\mathcal{H}$ 28'53		retrograde	1205 Aug 31 j 18:50	25° $\mathcal{B}$ 45'10	
opposition	1199 Aug 19 j 05:46	2° $\mathcal{H}$ 04'20	-2°00'-10	opposition	1205 Nov 07 j 10:45	22° $\mathcal{B}$ 15'21	-2°-17'-41
min. Earth dist.	1199 Aug 19 j 09:30	2° $\mathcal{H}$ 03'37	8.62362 AU	min. Earth dist.	1205 Nov 07 j 07:09	22° $\mathcal{B}$ 16'06	8.05542 AU
	1199 Sep 17 j 07:45	30° $\mathcal{R}$ $\approx$		direct	1206 Jan 12 j 18:38	18° $\mathcal{B}$ 48'32	
direct	1199 Oct 26 j 13:34	28° $\approx$ 43'48		evening set	1206 Apr 26 j 01:02	26° $\mathcal{B}$ 56'02	
	1199 Dec 03 j 21:05	0° $\mathcal{H}$					
evening set	1200 Feb 03 j 11:54	6° $\mathcal{H}$ 05'22		conjunction	1206 May 13 j 23:42	29° $\mathcal{B}$ 15'34	-1°-39'-49
				minimum elong	1206 May 13 j 23:46	29° $\mathcal{B}$ 15'35	1°39'50
conjunction	1200 Feb 20 j 10:19	8° $\mathcal{H}$ 10'25	-1°-47'-8	max. Earth dist.	1206 May 14 j 04:45	29° $\mathcal{B}$ 17'13	10.03488 AU
minimum elong	1200 Feb 20 j 10:17	8° $\mathcal{H}$ 10'24	1°47'08		1206 May 19 j 16:00	0° $\mathcal{H}$	
max. Earth dist.	1200 Feb 20 j 06:04	8° $\mathcal{H}$ 09'06	10.56619 AU	morning rise	1206 Jun 01 j 01:11	1° $\mathcal{H}$ 35'58	
morning rise	1200 Mar 08 j 13:10	10° $\mathcal{H}$ 16'49		retrograde	1206 Sep 15 j 10:23	9° $\mathcal{H}$ 57'36	
retrograde	1200 Jun 22 j 07:02	18° $\mathcal{H}$ 03'56		opposition	1206 Nov 21 j 16:24	6° $\mathcal{H}$ 27'55	-1°-49'-20
opposition	1200 Aug 31 j 09:00	14° $\mathcal{H}$ 38'03	-2°-23'-7	min. Earth dist.	1206 Nov 21 j 12:09	6° $\mathcal{H}$ 28'47	8.02278 AU
min. Earth dist.	1200 Aug 31 j 11:40	14° $\mathcal{H}$ 37'32	8.50913 AU	direct	1207 Jan 27 j 01:55	3° $\mathcal{H}$ 00'08	
direct	1200 Nov 07 j 05:30	11° $\mathcal{H}$ 16'38		evening set	1207 May 11 j 02:05	11° $\mathcal{H}$ 11'53	
evening set	1201 Feb 15 j 09:40	18° $\mathcal{H}$ 46'06					
conjunction	1201 Mar 04 j 11:10	20° $\mathcal{H}$ 53'33	-2°-2'-59	conjunction	1207 May 29 j 04:21	13° $\mathcal{H}$ 32'43	-1°-14'-4
minimum elong	1201 Mar 04 j 11:08	20° $\mathcal{H}$ 53'32	2°03'00	minimum elong	1207 May 29 j 04:24	13° $\mathcal{H}$ 32'44	1°14'05
max. Earth dist.	1201 Mar 04 j 09:12	20° $\mathcal{H}$ 52'56	10.45073 AU	max. Earth dist.	1207 May 29 j 10:25	13° $\mathcal{H}$ 34'42	10.01574 AU
morning rise	1201 Mar 21 j 17:11	23° $\mathcal{H}$ 02'27		morning rise	1207 Jun 16 j 08:09	15° $\mathcal{H}$ 54'01	
	1201 Jun 01 j 19:48	0° $\mathcal{Y}$		retrograde	1207 Sep 30 j 00:49	24° $\mathcal{H}$ 13'18	
retrograde	1201 Jul 06 j 02:43	0° $\mathcal{Y}$ 59'15		opposition	1207 Dec 05 j 22:25	20° $\mathcal{H}$ 44'07	-1°-14'-5
	1201 Aug 09 j 18:37	30° $\mathcal{R}$ $\mathcal{H}$		min. Earth dist.	1207 Dec 05 j 17:19	20° $\mathcal{H}$ 45'11	8.01687 AU
opposition	1201 Sep 13 j 18:18	27° $\mathcal{H}$ 32'06	-2°-39'-34	direct	1208 Feb 10 j 13:21	17° $\mathcal{H}$ 15'35	
min. Earth dist.	1201 Sep 13 j 19:04	27° $\mathcal{H}$ 31'57	8.39492 AU	evening set	1208 May 25 j 05:55	25° $\mathcal{H}$ 29'43	
direct	1201 Nov 20 j 03:23	24° $\mathcal{H}$ 09'44					
	1202 Feb 13 j 21:54	0° $\mathcal{Y}$		conjunction	1208 Jun 12 j 10:21	27° $\mathcal{H}$ 50'59	0°-43'-44
evening set	1202 Feb 28 j 17:34	1° $\mathcal{Y}$ 47'35		minimum elong	1208 Jun 12 j 10:23	27° $\mathcal{H}$ 51'00	0°43'45
				max. Earth dist.	1208 Jun 12 j 17:22	27° $\mathcal{H}$ 53'16	10.02431 AU
conjunction	1202 Mar 17 j 22:37	3° $\mathcal{Y}$ 57'36	-2°-12'-57		1208 Jun 29 j 00:25	0° $\mathcal{B}$	
minimum elong	1202 Mar 17 j 22:36	3° $\mathcal{Y}$ 57'36	2°12'58	morning rise	1208 Jun 30 j 14:53	0° $\mathcal{B}$ 12'17	
max. Earth dist.	1202 Mar 17 j 22:47	3° $\mathcal{Y}$ 57'39	10.33847 AU	retrograde	1208 Oct 13 j 11:06	8° $\mathcal{B}$ 26'48	
morning rise	1202 Apr 04 j 08:15	6° $\mathcal{Y}$ 09'08		opposition	1208 Dec 19 j 03:12	4° $\mathcal{B}$ 58'25	0°-34'-21
retrograde	1202 Jul 20 j 06:24	14° $\mathcal{Y}$ 14'52		min. Earth dist.	1208 Dec 18 j 21:21	4° $\mathcal{B}$ 59'38	8.03928 AU
opposition	1202 Sep 27 j 09:28	10° $\mathcal{Y}$ 46'39	-2°-48'-6	direct	1209 Feb 24 j 02:28	1° $\mathcal{B}$ 29'23	
min. Earth dist.	1202 Sep 27 j 08:20	10° $\mathcal{Y}$ 46'53	8.28686 AU	evening set	1209 Jun 09 j 09:30	9° $\mathcal{B}$ 43'43	
direct	1202 Dec 03 j 07:11	7° $\mathcal{Y}$ 23'15					
evening set	1203 Mar 14 j 11:55	15° $\mathcal{Y}$ 09'36		conjunction	1209 Jun 27 j 14:22	12° $\mathcal{B}$ 04'27	0°-10'-54
				minimum elong	1209 Jun 27 j 14:23	12° $\mathcal{B}$ 04'28	0°10'56
conjunction	1203 Mar 31 j 21:02	17° $\mathcal{Y}$ 22'16	-2°-16'-2	behind sun begin	1209 Jun 27 j 08:54	12° $\mathcal{B}$ 02'42	
minimum elong	1203 Mar 31 j 21:03	17° $\mathcal{Y}$ 22'16	2°16'03	behind sun end	1209 Jun 27 j 19:52	12° $\mathcal{B}$ 06'13	
max. Earth dist.	1203 Mar 31 j 22:48	17° $\mathcal{Y}$ 22'50	10.23554 AU	max. Earth dist.	1209 Jun 27 j 22:04	12° $\mathcal{B}$ 06'56	10.06109 AU
morning rise	1203 Apr 18 j 10:45	19° $\mathcal{Y}$ 36'26		morning rise	1209 Jul 15 j 17:55	14° $\mathcal{B}$ 24'48	
retrograde	1203 Aug 03 j 15:40	27° $\mathcal{Y}$ 49'38		retrograde	1209 Oct 27 j 15:55	22° $\mathcal{B}$ 32'32	
				asc. node	1209 Oct 29 j 11:11	22° $\mathcal{B}$ 32'21	



opposition	1210 Jan 02 j 05:23	19° $\mathring{S}$ 05'11	0°07'05	max. Earth dist.	1215 Sep 18 j 15:47	1° $\mathring{S}$ 53'31	10.65789 AU
min. Earth dist.	1210 Jan 01 j 23:19	19° $\mathring{S}$ 06'26	8.08934 AU	morning rise	1215 Oct 05 j 14:10	3° $\mathring{S}$ 56'44	
direct	1210 Mar 10 j 14:50	15° $\mathring{S}$ 35'54		retrograde	1216 Jan 13 j 06:21	11° $\mathring{S}$ 12'34	
evening set	1210 Jun 24 j 09:47	23° $\mathring{S}$ 48'15		opposition	1216 Mar 21 j 07:47	7° $\mathring{S}$ 52'45	2°46'19
				min. Earth dist.	1216 Mar 21 j 06:29	7° $\mathring{S}$ 53'00	8.71521 AU
conjunction	1210 Jul 12 j 13:16	26° $\mathring{S}$ 07'34	0°22'18	direct	1216 May 30 j 20:18	4° $\mathring{S}$ 27'29	
minimum elong	1210 Jul 12 j 13:15	26° $\mathring{S}$ 07'34	0°22'18	evening set	1216 Sep 13 j 00:27	11° $\mathring{S}$ 59'50	
max. Earth dist.	1210 Jul 12 j 20:54	26° $\mathring{S}$ 10'01	10.12408 AU				
morning rise	1210 Jul 30 j 14:15	28° $\mathring{S}$ 26'05		conjunction	1216 Sep 30 j 01:42	14° $\mathring{S}$ 02'37	2°16'52
	1210 Aug 12 j 06:19	0° $\mathring{S}$		minimum elong	1216 Sep 30 j 01:42	14° $\mathring{S}$ 02'36	2°16'52
retrograde	1210 Nov 10 j 14:16	6° $\mathring{S}$ 25'35		max. Earth dist.	1216 Sep 30 j 02:25	14° $\mathring{S}$ 02'49	10.76772 AU
opposition	1211 Jan 16 j 03:37	2° $\mathring{S}$ 59'27	0°47'28	morning rise	1216 Oct 16 j 22:27	16° $\mathring{S}$ 04'05	
min. Earth dist.	1211 Jan 15 j 22:11	3° $\mathring{S}$ 00'33	8.16398 AU	retrograde	1217 Jan 24 j 08:39	23° $\mathring{S}$ 13'25	
	1211 Mar 01 j 10:36	30° $\mathring{R}$ $\mathring{S}$		opposition	1217 Apr 02 j 21:04	19° $\mathring{S}$ 54'35	2°47'55
direct	1211 Mar 25 j 00:58	29° $\mathring{S}$ 30'11		min. Earth dist.	1217 Apr 02 j 21:29	19° $\mathring{S}$ 54'30	8.82024 AU
	1211 Apr 17 j 16:31	0° $\mathring{S}$		direct	1217 Jun 12 j 17:59	16° $\mathring{S}$ 30'33	
evening set	1211 Jul 09 j 04:20	7° $\mathring{S}$ 38'38		evening set	1217 Sep 25 j 07:52	23° $\mathring{S}$ 55'15	
conjunction	1211 Jul 27 j 04:47	9° $\mathring{S}$ 55'44	0°53'40	conjunction	1217 Oct 12 j 05:27	25° $\mathring{S}$ 55'51	2°15'26
minimum elong	1211 Jul 27 j 04:44	9° $\mathring{S}$ 55'43	0°53'39	minimum elong	1217 Oct 12 j 05:27	25° $\mathring{S}$ 55'51	2°15'26
max. Earth dist.	1211 Jul 27 j 11:19	9° $\mathring{S}$ 57'49	10.20921 AU	max. Earth dist.	1217 Oct 12 j 03:57	25° $\mathring{S}$ 55'24	10.86649 AU
morning rise	1211 Aug 14 j 01:49	12° $\mathring{S}$ 11'44		morning rise	1217 Oct 28 j 23:10	27° $\mathring{S}$ 55'18	
	1211 Sep 06 j 13:03	15° $\mathring{S}$			1217 Nov 16 j 07:44	0° $\mathring{M}$	
retrograde	1211 Nov 24 j 04:50	20° $\mathring{S}$ 02'07		retrograde	1218 Feb 05 j 06:09	4° $\mathring{M}$ 59'22	
opposition	1212 Jan 29 j 20:45	16° $\mathring{S}$ 37'19	1°24'18	opposition	1218 Apr 15 j 05:50	1° $\mathring{M}$ 41'19	2°42'22
min. Earth dist.	1212 Jan 29 j 16:10	16° $\mathring{S}$ 38'14	8.25844 AU	min. Earth dist.	1218 Apr 15 j 07:18	1° $\mathring{M}$ 41'02	8.91196 AU
	1212 Feb 19 j 18:02	15° $\mathring{R}$ $\mathring{S}$			1218 May 08 j 18:08	30° $\mathring{R}$ $\mathring{S}$	
direct	1212 Apr 07 j 07:38	13° $\mathring{S}$ 08'22		direct	1218 Jun 25 j 08:44	28° $\mathring{S}$ 18'32	
	1212 May 24 j 08:24	15° $\mathring{S}$			1218 Aug 10 j 20:54	0° $\mathring{M}$	
evening set	1212 Jul 22 j 14:37	21° $\mathring{S}$ 11'16		evening set	1218 Oct 07 j 07:10	5° $\mathring{M}$ 36'17	
conjunction	1212 Aug 09 j 10:50	23° $\mathring{S}$ 25'37	1°21'26	conjunction	1218 Oct 24 j 01:58	7° $\mathring{M}$ 35'09	2°08'21
minimum elong	1212 Aug 09 j 10:47	23° $\mathring{S}$ 25'36	1°21'26	minimum elong	1218 Oct 24 j 02:00	7° $\mathring{M}$ 35'09	2°08'21
max. Earth dist.	1212 Aug 09 j 16:00	23° $\mathring{S}$ 27'15	10.31120 AU	max. Earth dist.	1218 Oct 23 j 23:19	7° $\mathring{M}$ 34'21	10.95021 AU
morning rise	1212 Aug 27 j 03:02	25° $\mathring{S}$ 38'40		morning rise	1218 Nov 09 j 17:25	9° $\mathring{M}$ 33'03	
	1212 Oct 04 j 17:29	0° $\mathring{M}$			1219 Jan 04 j 15:06	15° $\mathring{M}$	
retrograde	1212 Dec 06 j 09:26	3° $\mathring{M}$ 19'42		retrograde	1219 Feb 17 j 01:09	16° $\mathring{M}$ 33'13	
	1213 Feb 10 j 13:35	30° $\mathring{R}$ $\mathring{S}$			1219 Apr 02 j 22:15	15° $\mathring{R}$ $\mathring{M}$	
opposition	1213 Feb 11 j 08:20	29° $\mathring{S}$ 56'15	1°55'38	opposition	1219 Apr 27 j 11:20	13° $\mathring{M}$ 15'44	2°30'19
min. Earth dist.	1213 Feb 11 j 04:23	29° $\mathring{S}$ 57'03	8.36696 AU	min. Earth dist.	1219 Apr 27 j 13:15	13° $\mathring{M}$ 15'23	8.98669 AU
direct	1213 Apr 21 j 10:18	26° $\mathring{S}$ 27'55		direct	1219 Jul 07 j 18:32	9° $\mathring{M}$ 54'11	
	1213 Jun 27 j 05:27	0° $\mathring{M}$			1219 Sep 30 j 04:28	15° $\mathring{M}$	
evening set	1213 Aug 05 j 14:52	4° $\mathring{M}$ 23'58		evening set	1219 Oct 18 j 23:42	17° $\mathring{M}$ 05'50	
conjunction	1213 Aug 23 j 06:16	6° $\mathring{M}$ 35'17	1°44'18	conjunction	1219 Nov 04 j 16:32	19° $\mathring{M}$ 03'25	1°56'11
minimum elong	1213 Aug 23 j 06:13	6° $\mathring{M}$ 35'16	1°44'18	minimum elong	1219 Nov 04 j 16:34	19° $\mathring{M}$ 03'26	1°56'10
max. Earth dist.	1213 Aug 23 j 10:14	6° $\mathring{M}$ 36'32	10.42407 AU	max. Earth dist.	1219 Nov 04 j 13:33	19° $\mathring{M}$ 02'32	11.01558 AU
morning rise	1213 Sep 09 j 17:12	8° $\mathring{M}$ 45'12		morning rise	1219 Nov 21 j 06:27	21° $\mathring{M}$ 00'13	
retrograde	1213 Dec 19 j 06:55	16° $\mathring{M}$ 17'09		retrograde	1220 Feb 28 j 20:03	27° $\mathring{M}$ 57'58	
opposition	1214 Feb 24 j 13:55	12° $\mathring{M}$ 55'00	2°20'09	opposition	1220 May 08 j 14:27	24° $\mathring{M}$ 40'51	2°12'28
min. Earth dist.	1214 Feb 24 j 10:16	12° $\mathring{M}$ 55'43	8.48329 AU	min. Earth dist.	1220 May 08 j 17:12	24° $\mathring{M}$ 40'20	9.04173 AU
direct	1214 May 05 j 05:33	9° $\mathring{M}$ 27'31		direct	1220 Jul 18 j 21:53	21° $\mathring{M}$ 20'24	
evening set	1214 Aug 19 j 04:39	17° $\mathring{M}$ 15'55		evening set	1220 Oct 29 j 11:22	28° $\mathring{M}$ 27'01	
					1220 Nov 11 j 18:03	0° $\mathring{S}$	
conjunction	1214 Sep 05 j 15:05	19° $\mathring{M}$ 24'10	2°01'23				
minimum elong	1214 Sep 05 j 15:03	19° $\mathring{M}$ 24'09	2°01'23	conjunction	1220 Nov 15 j 02:48	0° $\mathring{S}$ 23'47	1°39'32
max. Earth dist.	1214 Sep 05 j 18:18	19° $\mathring{M}$ 25'10	10.54160 AU	minimum elong	1220 Nov 15 j 02:50	0° $\mathring{S}$ 23'47	1°39'33
morning rise	1214 Sep 22 j 20:44	21° $\mathring{M}$ 30'58		max. Earth dist.	1220 Nov 14 j 22:47	0° $\mathring{S}$ 22'36	11.06030 AU
retrograde	1214 Dec 31 j 22:19	28° $\mathring{M}$ 54'26		morning rise	1220 Dec 01 j 16:05	2° $\mathring{S}$ 19'58	
opposition	1215 Mar 09 j 13:28	25° $\mathring{M}$ 33'29	2°37'07	retrograde	1221 Mar 11 j 12:09	9° $\mathring{S}$ 16'44	
min. Earth dist.	1215 Mar 09 j 10:41	25° $\mathring{M}$ 34'02	8.60124 AU	opposition	1221 May 20 j 15:58	5° $\mathring{S}$ 59'42	1°49'39
direct	1215 May 18 j 16:25	22° $\mathring{M}$ 07'03		min. Earth dist.	1221 May 20 j 20:20	5° $\mathring{S}$ 58'54	9.07524 AU
evening set	1215 Sep 01 j 07:45	29° $\mathring{M}$ 47'25		direct	1221 Jul 30 j 20:54	2° $\mathring{S}$ 40'10	
	1215 Sep 03 j 01:47	0° $\mathring{S}$		evening set	1221 Nov 09 j 19:40	9° $\mathring{S}$ 43'03	
conjunction	1215 Sep 18 j 13:24	1° $\mathring{S}$ 52'47	2°12'15	conjunction	1221 Nov 26 j 10:15	11° $\mathring{S}$ 39'23	1°19'08
minimum elong	1215 Sep 18 j 13:22	1° $\mathring{S}$ 52'47	2°12'15	minimum elong	1221 Nov 26 j 10:17	11° $\mathring{S}$ 39'24	1°19'09



max. Earth dist.	1221 Nov 26 j 04:25	11°♂37'40	11.08287 AU		1227 Dec 15 j 14:04	15°♂	
morning rise	1221 Dec 12 j 23:42	13°♂35'24		evening set	1228 Jan 16 j 21:26	18°♂33'45	
retrograde	1222 Mar 23 j 06:03	20°♂32'45					
opposition	1222 Jun 01 j 16:58	17°♂15'32	1°22'44	conjunction	1228 Feb 02 j 16:33	20°♂35'27	-1°-16'-6
min. Earth dist.	1222 Jun 01 j 22:13	17°♂14'34	9.08604 AU	minimum elong	1228 Feb 02 j 16:31	20°♂35'26	1°16'06
direct	1222 Aug 11 j 19:14	13°♂56'43		max. Earth dist.	1228 Feb 02 j 10:19	20°♂33'33	10.75388 AU
evening set	1222 Nov 21 j 02:14	20°♂57'11		morning rise	1228 Feb 19 j 15:01	22°♂38'15	
					1228 May 19 j 22:41	0°♂	
conjunction	1222 Dec 07 j 16:35	22°♂53'30	0°55'44	retrograde	1228 Jun 03 j 06:45	0°♂10'12	
minimum elong	1222 Dec 07 j 16:37	22°♂53'31	0°55'44		1228 Jun 17 j 15:27	30°♂	
max. Earth dist.	1222 Dec 07 j 10:23	22°♂51'41	11.08243 AU	opposition	1228 Aug 12 j 18:53	26°♂46'51	-1°-48'-2
morning rise	1222 Dec 24 j 06:36	24°♂49'45		min. Earth dist.	1228 Aug 12 j 23:31	26°♂45'58	8.69753 AU
	1223 Feb 15 j 00:42	0°♂		direct	1228 Oct 20 j 10:04	23°♂27'11	
retrograde	1223 Apr 04 j 01:32	1°♂49'13			1229 Jan 21 j 23:50	0°♂	
	1223 May 23 j 23:00	30°♂		evening set	1229 Jan 28 j 05:03	0°♂44'29	
opposition	1223 Jun 13 j 18:25	28°♂31'32	0°52'39				
min. Earth dist.	1223 Jun 13 j 23:35	28°♂30'36	9.07370 AU	conjunction	1229 Feb 14 j 02:17	2°♂48'15	-1°-38'-19
direct	1223 Aug 23 j 14:38	25°♂13'14		minimum elong	1229 Feb 14 j 02:14	2°♂48'14	1°38'19
	1223 Nov 12 j 09:57	0°♂		max. Earth dist.	1229 Feb 13 j 20:41	2°♂46'32	10.63866 AU
evening set	1223 Dec 02 j 08:53	2°♂12'41		morning rise	1229 Mar 03 j 03:25	4°♂53'17	
				retrograde	1229 Jun 16 j 13:46	12°♂34'58	
conjunction	1223 Dec 18 j 23:32	4°♂09'23	0°30'07	opposition	1229 Aug 25 j 18:42	9°♂10'05	-2°-13'-21
minimum elong	1223 Dec 18 j 23:33	4°♂09'23	0°30'07	min. Earth dist.	1229 Aug 25 j 22:23	9°♂09'22	8.57898 AU
max. Earth dist.	1223 Dec 18 j 17:43	4°♂07'40	11.05887 AU	direct	1229 Nov 01 j 20:50	5°♂49'25	
morning rise	1224 Jan 04 j 14:27	6°♂06'14		evening set	1230 Feb 09 j 21:44	13°♂14'20	
retrograde	1224 Apr 15 j 01:31	13°♂09'22					
opposition	1224 Jun 24 j 21:20	9°♂50'58	0°20'22	conjunction	1230 Feb 26 j 21:32	15°♂20'26	-1°-56'-25
min. Earth dist.	1224 Jun 25 j 02:21	9°♂50'02	9.03854 AU	minimum elong	1230 Feb 26 j 21:30	15°♂20'25	1°56'26
direct	1224 Sep 03 j 10:09	6°♂32'54		max. Earth dist.	1230 Feb 26 j 16:30	15°♂18'52	10.51759 AU
evening set	1224 Dec 12 j 17:18	13°♂32'50		morning rise	1230 Mar 16 j 01:52	17°♂27'57	
				retrograde	1230 Jun 30 j 05:06	25°♂19'33	
conjunction	1224 Dec 29 j 08:29	15°♂30'16	0°03'12	opposition	1230 Sep 08 j 00:44	21°♂53'10	-2°-32'-55
minimum elong	1224 Dec 29 j 08:29	15°♂30'16	0°03'12	min. Earth dist.	1230 Sep 08 j 03:38	21°♂52'36	8.45755 AU
behind sun begin	1224 Dec 29 j 01:32	15°♂28'14		direct	1230 Nov 14 j 14:39	18°♂31'20	
behind sun end	1224 Dec 29 j 15:25	15°♂32'18		evening set	1231 Feb 23 j 00:12	26°♂04'36	
max. Earth dist.	1224 Dec 29 j 01:57	15°♂28'21	11.01274 AU				
morning rise	1225 Jan 15 j 00:50	17°♂28'06		conjunction	1231 Mar 12 j 03:16	28°♂13'15	-2°-9'-12
desc. node	1225 Feb 10 j 12:55	20°♂22'18		minimum elong	1231 Mar 12 j 03:15	28°♂13'15	2°09'13
retrograde	1225 Apr 27 j 06:27	24°♂36'20		max. Earth dist.	1231 Mar 11 j 23:35	28°♂12'05	10.39665 AU
opposition	1225 Jul 07 j 02:44	21°♂17'00	0°-13'-2		1231 Mar 26 j 07:35	0°♂	
min. Earth dist.	1225 Jul 07 j 08:29	21°♂15'56	8.98133 AU	morning rise	1231 Mar 29 j 11:14	0°♂23'26	
direct	1225 Sep 15 j 05:03	17°♂58'54		retrograde	1231 Jul 14 j 03:42	8°♂24'35	
evening set	1225 Dec 24 j 05:12	25°♂00'53		opposition	1231 Sep 21 j 12:47	4°♂56'47	-2°-45'-16
				min. Earth dist.	1231 Sep 21 j 14:45	4°♂56'24	8.33927 AU
conjunction	1226 Jan 09 j 21:10	26°♂59'23	0°-24'-14	direct	1231 Nov 27 j 15:49	1°♂33'41	
minimum elong	1226 Jan 09 j 21:09	26°♂59'22	0°24'16	evening set	1232 Mar 07 j 13:06	9°♂15'42	
max. Earth dist.	1226 Jan 09 j 13:35	26°♂57'07	10.94505 AU				
morning rise	1226 Jan 26 j 15:20	28°♂58'32		conjunction	1232 Mar 24 j 20:11	11°♂27'04	-2°-15'-33
	1226 Feb 04 j 12:53	0°♂		minimum elong	1232 Mar 24 j 20:11	11°♂27'03	2°15'34
retrograde	1226 May 09 j 13:45	6°♂13'23		max. Earth dist.	1232 Mar 24 j 18:46	11°♂26'36	10.28193 AU
opposition	1226 Jul 19 j 11:28	2°♂52'53	0°-46'-26	morning rise	1232 Apr 11 j 08:03	13°♂39'57	
min. Earth dist.	1226 Jul 19 j 17:51	2°♂51'41	8.90342 AU	retrograde	1232 Jul 27 j 08:31	21°♂49'35	
	1226 Sep 04 j 09:31	30°♂		opposition	1232 Oct 04 j 06:17	18°♂20'36	-2°-49'-4
direct	1226 Sep 27 j 02:41	29°♂34'28		min. Earth dist.	1232 Oct 04 j 06:38	18°♂20'32	8.23025 AU
	1226 Oct 19 j 13:58	0°♂		direct	1232 Dec 10 j 01:18	14°♂56'11	
evening set	1227 Jan 04 j 22:04	6°♂40'08		evening set	1233 Mar 21 j 12:16	22°♂46'52	
conjunction	1227 Jan 21 j 15:21	8°♂40'03	0°-51'-1	conjunction	1233 Apr 07 j 23:52	25°♂00'58	-2°-14'-37
minimum elong	1227 Jan 21 j 15:19	8°♂40'03	0°51'02	minimum elong	1233 Apr 07 j 23:53	25°♂00'58	2°14'38
max. Earth dist.	1227 Jan 21 j 07:54	8°♂37'49	10.85763 AU	max. Earth dist.	1233 Apr 08 j 00:52	25°♂01'18	10.17963 AU
morning rise	1227 Feb 07 j 11:32	10°♂40'52		morning rise	1233 Apr 25 j 15:50	27°♂16'30	
	1227 Mar 20 j 01:45	15°♂			1233 May 18 j 03:57	0°♂	
retrograde	1227 May 22 j 06:09	18°♂03'44		retrograde	1233 Aug 10 j 18:52	5°♂32'55	
	1227 Jul 28 j 00:11	15°♂		opposition	1233 Oct 18 j 04:58	2°♂03'04	-2°-43'-25
opposition	1227 Aug 01 j 00:38	14°♂41'52	-1°-18'-34	min. Earth dist.	1233 Oct 18 j 03:22	2°♂03'23	8.13647 AU
min. Earth dist.	1227 Aug 01 j 06:33	14°♂40'45	8.80742 AU		1233 Nov 14 j 05:49	30°♂	
direct	1227 Oct 09 j 05:09	11°♂22'57		direct	1233 Dec 23 j 17:42	28°♂37'22	



	1234 Jan 31 j 12:04	0°♄		max. Earth dist.	1239 Jul 06 j 11:06	20°♄01'56	10.07832 AU
evening set	1234 Apr 04 j 20:50	6°♄36'00		morning rise	1239 Jul 24 j 06:14	22°♄19'12	
					1239 Oct 15 j 07:52	0°♄	
conjunction	1234 Apr 22 j 13:09	8°♄52'42	-2°-5'-58	retrograde	1239 Nov 04 j 15:55	0°♄23'14	
minimum elong	1234 Apr 22 j 13:12	8°♄52'43	2°05'59		1239 Nov 25 j 02:37	30°♄	
max. Earth dist.	1234 Apr 22 j 16:28	8°♄53'47	10.09563 AU	opposition	1240 Jan 10 j 05:46	26°♄56'09	0°29'18
morning rise	1234 May 10 j 09:18	11°♄10'41		min. Earth dist.	1240 Jan 09 j 23:19	26°♄57'28	8.11471 AU
	1234 Jun 11 j 11:50	15°♄		direct	1240 Mar 17 j 21:51	23°♄26'31	
retrograde	1234 Aug 25 j 10:04	19°♄31'35			1240 Jun 18 j 15:58	0°♄	
opposition	1234 Nov 01 j 07:40	16°♄01'12	-2°-28'-3	evening set	1240 Jul 01 j 21:04	1°♄37'35	
min. Earth dist.	1234 Nov 01 j 04:19	16°♄01'53	8.06348 AU				
	1234 Nov 13 j 22:14	15°♄		conjunction	1240 Jul 19 j 23:11	3°♄55'57	0°39'40
direct	1235 Jan 06 j 16:07	12°♄34'18		minimum elong	1240 Jul 19 j 23:09	3°♄55'57	0°39'40
	1235 Feb 27 j 20:10	15°♄		max. Earth dist.	1240 Jul 20 j 07:05	3°♄58'30	10.15717 AU
evening set	1235 Apr 19 j 13:52	20°♄39'46		morning rise	1240 Aug 06 j 22:19	6°♄13'22	
				retrograde	1240 Nov 17 j 10:46	14°♄08'37	
conjunction	1235 May 07 j 10:46	22°♄58'42	-1°-49'-43	opposition	1241 Jan 23 j 01:42	10°♄43'00	1°08'04
minimum elong	1235 May 07 j 10:49	22°♄58'43	1°49'45	min. Earth dist.	1241 Jan 22 j 19:06	10°♄44'21	8.20418 AU
max. Earth dist.	1235 May 07 j 15:40	23°♄00'18	10.03507 AU	direct	1241 Apr 01 j 06:26	7°♄13'49	
morning rise	1235 May 25 j 10:45	25°♄18'40			1241 Jul 13 j 19:14	15°♄	
	1235 Jul 04 j 14:44	0°♄		evening set	1241 Jul 16 j 11:47	15°♄20'00	
retrograde	1235 Sep 09 j 02:57	3°♄41'17					
opposition	1235 Nov 15 j 12:56	0°♄10'48	-2°-3'-29	conjunction	1241 Aug 03 j 10:16	17°♄35'49	1°09'18
min. Earth dist.	1235 Nov 15 j 08:34	0°♄11'43	8.01585 AU	minimum elong	1241 Aug 03 j 10:13	17°♄35'48	1°09'18
	1235 Nov 17 j 17:12	30°♄		max. Earth dist.	1241 Aug 03 j 18:04	17°♄38'17	10.25581 AU
direct	1236 Jan 20 j 20:53	26°♄42'48		morning rise	1241 Aug 21 j 04:46	19°♄50'24	
	1236 Mar 22 j 08:01	0°♄		retrograde	1241 Nov 30 j 21:14	27°♄36'20	
evening set	1236 May 03 j 13:17	4°♄53'33		opposition	1242 Feb 05 j 16:20	24°♄12'17	1°42'09
				min. Earth dist.	1242 Feb 05 j 10:27	24°♄13'28	8.31080 AU
conjunction	1236 May 21 j 14:07	7°♄14'07	-1°-26'-39	direct	1242 Apr 15 j 10:38	20°♄43'47	
minimum elong	1236 May 21 j 14:10	7°♄14'08	1°26'40	evening set	1242 Jul 30 j 17:30	28°♄43'39	
max. Earth dist.	1236 May 21 j 19:57	7°♄16'02	10.00179 AU		1242 Aug 09 j 23:18	0°♄	
morning rise	1236 Jun 08 j 17:04	9°♄35'23					
retrograde	1236 Sep 22 j 18:56	17°♄56'54		conjunction	1242 Aug 17 j 11:22	0°♄56'30	1°34'33
opposition	1236 Nov 28 j 19:28	14°♄26'44	-1°-31'-6	minimum elong	1242 Aug 17 j 11:19	0°♄56'29	1°34'34
min. Earth dist.	1236 Nov 28 j 14:35	14°♄27'45	7.99674 AU	max. Earth dist.	1242 Aug 17 j 18:07	0°♄58'37	10.36836 AU
direct	1237 Feb 03 j 07:05	10°♄57'52		morning rise	1242 Sep 04 j 00:39	3°♄07'57	
evening set	1237 May 18 j 16:26	19°♄11'54		retrograde	1242 Dec 13 j 23:57	10°♄44'34	
				opposition	1243 Feb 19 j 01:18	7°♄22'03	2°09'53
conjunction	1237 Jun 05 j 20:01	21°♄33'18	0°-58'-9	min. Earth dist.	1243 Feb 18 j 20:48	7°♄22'57	8.42828 AU
minimum elong	1237 Jun 05 j 20:03	21°♄33'19	0°58'11	direct	1243 Apr 29 j 08:28	3°♄54'28	
max. Earth dist.	1237 Jun 06 j 02:38	21°♄35'28	9.99800 AU	evening set	1243 Aug 13 j 13:04	11°♄46'57	
morning rise	1237 Jun 24 j 00:33	23°♄54'59					
	1237 Aug 18 j 05:29	0°♄		conjunction	1243 Aug 31 j 01:46	13°♄56'41	1°54'20
retrograde	1237 Oct 07 j 07:03	2°♄12'45		minimum elong	1243 Aug 31 j 01:44	13°♄56'40	1°54'21
	1237 Nov 27 j 06:44	30°♄		max. Earth dist.	1243 Aug 31 j 06:39	13°♄58'12	10.48841 AU
opposition	1237 Dec 13 j 01:29	28°♄43'19	0°-53'-2	morning rise	1243 Sep 17 j 09:45	16°♄04'57	
min. Earth dist.	1237 Dec 12 j 20:06	28°♄44'26	8.00756 AU	retrograde	1243 Dec 26 j 18:25	23°♄32'37	
direct	1238 Feb 17 j 20:33	25°♄13'51		opposition	1244 Mar 03 j 04:19	20°♄11'33	2°30'18
	1238 May 04 j 22:50	0°♄		min. Earth dist.	1244 Mar 03 j 01:14	20°♄12'09	8.55013 AU
evening set	1238 Jun 02 j 20:43	3°♄29'01		direct	1244 May 12 j 00:02	16°♄45'04	
				evening set	1244 Aug 25 j 21:45	24°♄29'31	
conjunction	1238 Jun 21 j 01:33	5°♄50'20	0°-26'-9				
minimum elong	1238 Jun 21 j 01:35	5°♄50'20	0°26'11	conjunction	1244 Sep 12 j 05:23	26°♄36'12	2°08'02
max. Earth dist.	1238 Jun 21 j 08:45	5°♄52'40	10.02407 AU	minimum elong	1244 Sep 12 j 05:21	26°♄36'12	2°08'03
morning rise	1238 Jul 09 j 06:03	8°♄11'28		max. Earth dist.	1244 Sep 12 j 08:04	26°♄37'02	10.60966 AU
retrograde	1238 Oct 21 j 14:06	16°♄23'13		morning rise	1244 Sep 29 j 08:25	28°♄41'28	
opposition	1238 Dec 27 j 05:18	12°♄54'50	0°-11'-57		1244 Oct 10 j 10:39	0°♄	
min. Earth dist.	1238 Dec 26 j 23:28	12°♄56'02	8.04776 AU	retrograde	1245 Jan 07 j 04:41	6°♄00'56	
direct	1239 Mar 04 j 09:56	9°♄25'06		opposition	1245 Mar 16 j 01:31	2°♄41'07	2°42'58
asc. node	1239 Apr 15 j 05:11	10°♄58'12		min. Earth dist.	1245 Mar 15 j 23:18	2°♄41'32	8.66994 AU
evening set	1239 Jun 17 j 23:14	17°♄39'15			1245 Apr 25 j 04:46	30°♄	
				direct	1245 May 25 j 09:17	29°♄15'48	
conjunction	1239 Jul 06 j 03:36	19°♄59'32	0°07'14		1245 Jun 24 j 08:26	0°♄	
minimum elong	1239 Jul 06 j 03:35	19°♄59'31	0°07'14	evening set	1245 Sep 07 j 19:33	6°♄52'02	
behind sun begin	1239 Jul 05 j 20:51	19°♄57'22					
behind sun end	1239 Jul 06 j 10:19	20°♄01'41		conjunction	1245 Sep 24 j 22:42	8°♄55'56	2°15'26



minimum elong	1245 Sep 24 j 22:41	8°♄55'56	2°15'26	minimum elong	1251 Dec 03 j 05:10	18°♄16'55	1°06'11
max. Earth dist.	1245 Sep 24 j 23:56	8°♄56'19	10.72577 AU	max. Earth dist.	1251 Dec 02 j 22:35	18°♄14'59	11.07272 AU
morning rise	1245 Oct 11 j 21:20	10°♄58'30		morning rise	1251 Dec 19 j 18:48	20°♄13'08	
retrograde	1246 Jan 19 j 10:33	18°♄10'50		retrograde	1252 Mar 29 j 08:36	27°♄11'57	
opposition	1246 Mar 28 j 17:18	14°♄52'03	2°47'55	opposition	1252 Jun 07 j 22:09	23°♄54'10	1°06'01
min. Earth dist.	1246 Mar 28 j 16:11	14°♄52'16	8.78135 AU	min. Earth dist.	1252 Jun 08 j 04:18	23°♄53'02	9.06693 AU
direct	1246 Jun 07 j 11:04	11°♄27'58		direct	1252 Aug 17 j 20:34	20°♄35'14	
evening set	1246 Sep 20 j 07:33	18°♄56'13		evening set	1252 Nov 26 j 21:22	27°♄35'29	
conjunction	1246 Oct 07 j 06:50	20°♄57'46	2°16'39	conjunction	1252 Dec 13 j 11:52	29°♄32'08	0°41'25
minimum elong	1246 Oct 07 j 06:50	20°♄57'46	2°16'38	minimum elong	1252 Dec 13 j 11:53	29°♄32'09	0°41'25
max. Earth dist.	1246 Oct 07 j 06:42	20°♄57'43	10.83064 AU	max. Earth dist.	1252 Dec 13 j 04:06	29°♄29'51	11.05492 AU
morning rise	1246 Oct 24 j 01:46	22°♄58'03			1252 Dec 17 j 10:22	0°♄	
	1247 Jan 22 j 04:01	0°♄		morning rise	1252 Dec 30 j 02:31	1°♄28'52	
retrograde	1247 Jan 31 j 11:36	0°♄04'30		retrograde	1253 Apr 10 j 05:17	8°♄30'41	
	1247 Feb 09 j 19:04	30°♄		opposition	1253 Jun 20 j 00:31	5°♄12'08	0°34'32
opposition	1247 Apr 10 j 04:23	26°♄46'34	2°45'29	min. Earth dist.	1253 Jun 20 j 07:26	5°♄10'52	9.03769 AU
min. Earth dist.	1247 Apr 10 j 05:04	26°♄46'26	8.87883 AU	direct	1253 Aug 29 j 17:00	1°♄53'22	
direct	1247 Jun 20 j 03:50	23°♄23'42		evening set	1253 Dec 08 j 05:03	8°♄53'34	
	1247 Sep 26 j 00:09	0°♄					
evening set	1247 Oct 02 j 10:53	0°♄44'41		conjunction	1253 Dec 24 j 19:59	10°♄50'50	0°14'55
conjunction	1247 Oct 19 j 06:57	2°♄44'18	2°12'00	minimum elong	1253 Dec 24 j 20:00	10°♄50'50	0°14'55
minimum elong	1247 Oct 19 j 06:58	2°♄44'18	2°11'59	behind sun begin	1253 Dec 24 j 17:07	10°♄49'59	
max. Earth dist.	1247 Oct 19 j 04:57	2°♄43'42	10.91967 AU	behind sun end	1253 Dec 24 j 22:53	10°♄51'41	
morning rise	1247 Nov 04 j 23:11	4°♄42'50		max. Earth dist.	1253 Dec 24 j 12:09	10°♄48'31	11.01498 AU
retrograde	1248 Feb 12 j 07:45	11°♄44'50		morning rise	1254 Jan 10 j 11:54	12°♄48'24	
opposition	1248 Apr 21 j 11:56	8°♄27'31	2°36'13	retrograde	1254 Apr 22 j 07:27	19°♄54'49	
min. Earth dist.	1248 Apr 21 j 14:48	8°♄26'59	8.95881 AU	opposition	1254 Jul 02 j 04:57	16°♄35'17	0°01'26
direct	1248 Jul 01 j 15:44	5°♄05'47		min. Earth dist.	1254 Jul 02 j 11:22	16°♄34'06	8.98691 AU
evening set	1248 Oct 13 j 06:48	12°♄20'20		desc. node	1254 Jul 18 j 07:51	15°♄25'08	
conjunction	1248 Oct 30 j 00:23	14°♄18'29	2°02'00	direct	1254 Sep 10 j 13:16	13°♄16'32	
minimum elong	1248 Oct 30 j 00:25	14°♄18'30	2°01'59	evening set	1254 Dec 19 j 15:16	20°♄18'10	
max. Earth dist.	1248 Oct 29 j 19:58	14°♄17'10	10.99010 AU	conjunction	1255 Jan 05 j 07:05	22°♄16'23	0°-12'-29
	1248 Nov 04 j 20:36	15°♄		minimum elong	1255 Jan 05 j 07:04	22°♄16'23	0°12'30
morning rise	1248 Nov 15 j 14:59	16°♄15'47		behind sun begin	1255 Jan 05 j 02:27	22°♄15'01	
retrograde	1249 Feb 23 j 02:16	23°♄14'46		behind sun end	1255 Jan 05 j 11:41	22°♄17'44	
opposition	1249 May 03 j 16:31	19°♄57'46	2°20'49	max. Earth dist.	1255 Jan 05 j 00:12	22°♄14'21	10.95414 AU
min. Earth dist.	1249 May 03 j 20:43	19°♄56'59	9.01899 AU	morning rise	1255 Jan 22 j 00:26	24°♄15'09	
direct	1249 Jul 13 j 23:13	16°♄37'00			1255 Mar 22 j 16:54	0°♄	
evening set	1249 Oct 24 j 21:02	23°♄46'09		retrograde	1255 May 04 j 14:35	1°♄27'41	
conjunction	1249 Nov 10 j 13:00	25°♄43'18	1°47'14		1255 Jun 17 j 15:32	30°♄	
minimum elong	1249 Nov 10 j 13:02	25°♄43'19	1°47'13	opposition	1255 Jul 14 j 12:27	28°♄06'59	0°-32'-10
max. Earth dist.	1249 Nov 10 j 07:17	25°♄41'37	11.03996 AU	min. Earth dist.	1255 Jul 14 j 17:59	28°♄05'57	8.91634 AU
morning rise	1249 Nov 27 j 02:40	27°♄39'48		direct	1255 Sep 22 j 09:51	24°♄48'04	
	1249 Dec 18 j 05:18	0°♄			1255 Dec 14 j 18:07	0°♄	
retrograde	1250 Mar 06 j 18:54	4°♄37'12		evening set	1255 Dec 31 j 06:02	1°♄52'41	
opposition	1250 May 15 j 18:54	1°♄20'13	2°00'05	conjunction	1256 Jan 16 j 22:55	3°♄52'12	0°-39'-39
min. Earth dist.	1250 May 15 j 23:33	1°♄19'22	9.05764 AU	minimum elong	1256 Jan 16 j 22:53	3°♄52'12	0°39'40
	1250 Jun 03 j 10:11	30°♄		max. Earth dist.	1256 Jan 16 j 16:15	3°♄50'12	10.87457 AU
direct	1250 Jul 26 j 01:51	28°♄00'16		morning rise	1256 Feb 02 j 18:10	5°♄52'29	
	1250 Sep 14 j 20:29	0°♄		retrograde	1256 May 16 j 04:54	13°♄12'27	
evening set	1250 Nov 05 j 07:05	5°♄05'08		opposition	1256 Jul 25 j 23:52	9°♄50'31	-1°-5'-4
conjunction	1250 Nov 21 j 22:09	7°♄01'43	1°28'23	min. Earth dist.	1256 Jul 26 j 05:03	9°♄49'32	8.82852 AU
minimum elong	1250 Nov 21 j 22:12	7°♄01'44	1°28'23	direct	1256 Oct 03 j 09:13	6°♄31'11	
max. Earth dist.	1250 Nov 21 j 16:23	7°♄00'01	11.06775 AU	evening set	1257 Jan 11 j 02:45	13°♄40'19	
morning rise	1250 Dec 08 j 11:28	8°♄57'52			1257 Jan 22 j 04:17	15°♄	
retrograde	1251 Mar 18 j 13:38	15°♄55'14		conjunction	1257 Jan 27 j 21:01	15°♄41'27	-1°-5'-38
opposition	1251 May 27 j 20:30	12°♄37'58	1°34'51	minimum elong	1257 Jan 27 j 20:59	15°♄41'26	1°05'39
min. Earth dist.	1251 May 28 j 01:37	12°♄37'01	9.07371 AU	max. Earth dist.	1257 Jan 27 j 14:05	15°♄39'20	10.77920 AU
direct	1251 Aug 07 j 01:18	9°♄18'38		morning rise	1257 Feb 13 j 18:37	17°♄43'35	
evening set	1251 Nov 16 j 14:33	16°♄20'28		retrograde	1257 May 29 j 00:56	25°♄12'07	
conjunction	1251 Dec 03 j 05:08	18°♄16'54	1°06'11	opposition	1257 Aug 07 j 16:10	21°♄48'51	-1°-35'-54
				min. Earth dist.	1257 Aug 07 j 21:17	21°♄47'52	8.72676 AU
				direct	1257 Oct 15 j 12:12	18°♄28'56	



evening set	1258 Jan 23 j 06:48	25° $\approx$ 44'00		conjunction	1264 Apr 30 j 12:11	17° $\text{U}$ 15'58	-1°-57'-19
				minimum elong	1264 Apr 30 j 12:15	17° $\text{U}$ 15'59	1°57'20
conjunction	1258 Feb 09 j 02:58	27° $\approx$ 47'01	-1°-29'-15	max. Earth dist.	1264 Apr 30 j 16:36	17° $\text{U}$ 17'24	10.06920 AU
minimum elong	1258 Feb 09 j 02:56	27° $\approx$ 47'00	1°29'16	morning rise	1264 May 18 j 10:39	19° $\text{U}$ 35'03	
max. Earth dist.	1258 Feb 08 j 21:07	27° $\approx$ 45'13	10.67171 AU	retrograde	1264 Sep 02 j 07:41	27° $\text{U}$ 57'01	
morning rise	1258 Feb 26 j 03:06	29° $\approx$ 51'15		opposition	1264 Nov 08 j 22:18	24° $\text{U}$ 27'09	-2°-14'-40
	1258 Feb 27 j 08:18	0° $\text{H}$		min. Earth dist.	1264 Nov 08 j 18:22	24° $\text{U}$ 27'58	8.04622 AU
retrograde	1258 Jun 11 j 03:56	7° $\text{H}$ 29'17		direct	1265 Jan 14 j 06:10	21° $\text{U}$ 00'13	
opposition	1258 Aug 20 j 13:57	4° $\text{H}$ 04'36	-2°-3'-11	evening set	1265 Apr 27 j 14:21	29° $\text{U}$ 08'33	
min. Earth dist.	1258 Aug 20 j 18:02	4° $\text{H}$ 03'49	8.61520 AU		1265 May 04 j 06:16	0° $\text{II}$	
direct	1258 Oct 27 j 22:09	0° $\text{H}$ 43'57					
evening set	1259 Feb 04 j 19:33	8° $\text{H}$ 06'06		conjunction	1265 May 15 j 13:31	1° $\text{II}$ 28'20	-1°-36'-59
				minimum elong	1265 May 15 j 13:35	1° $\text{II}$ 28'21	1°37'00
conjunction	1259 Feb 21 j 18:16	10° $\text{H}$ 11'20	-1°-49'-16	max. Earth dist.	1265 May 15 j 19:38	1° $\text{II}$ 30'20	10.02732 AU
minimum elong	1259 Feb 21 j 18:13	10° $\text{H}$ 11'19	1°49'17	morning rise	1265 Jun 02 j 15:15	3° $\text{II}$ 48'57	
max. Earth dist.	1259 Feb 21 j 14:24	10° $\text{H}$ 10'08	10.55672 AU	retrograde	1265 Sep 16 j 23:25	12° $\text{II}$ 10'49	
morning rise	1259 Mar 10 j 21:12	12° $\text{H}$ 17'55		opposition	1265 Nov 23 j 04:27	8° $\text{II}$ 41'06	-1°-45'-22
retrograde	1259 Jun 24 j 17:02	20° $\text{H}$ 05'51		min. Earth dist.	1265 Nov 22 j 23:20	8° $\text{II}$ 42'09	8.01695 AU
opposition	1259 Sep 02 j 17:38	16° $\text{H}$ 39'48	-2°-25'-24	direct	1266 Jan 28 j 14:43	5° $\text{II}$ 13'13	
min. Earth dist.	1259 Sep 02 j 19:59	16° $\text{H}$ 39'21	8.49884 AU	evening set	1266 May 12 j 15:59	13° $\text{II}$ 25'31	
direct	1259 Nov 09 j 13:21	13° $\text{H}$ 18'17					
evening set	1260 Feb 17 j 18:03	20° $\text{H}$ 48'25		conjunction	1266 May 30 j 18:35	15° $\text{II}$ 46'29	-1°-10'-35
				minimum elong	1266 May 30 j 18:39	15° $\text{II}$ 46'30	1°10'36
conjunction	1260 Mar 05 j 19:50	22° $\text{H}$ 56'06	-2°-4'-27	max. Earth dist.	1266 May 31 j 01:44	15° $\text{II}$ 48'49	10.01170 AU
minimum elong	1260 Mar 05 j 19:48	22° $\text{H}$ 56'05	2°04'28	morning rise	1266 Jun 17 j 22:28	18° $\text{II}$ 07'54	
max. Earth dist.	1260 Mar 05 j 17:55	22° $\text{H}$ 55'30	10.43961 AU	retrograde	1266 Oct 01 j 13:31	26° $\text{II}$ 27'07	
morning rise	1260 Mar 23 j 02:04	25° $\text{H}$ 05'14		opposition	1266 Dec 07 j 10:43	22° $\text{II}$ 57'56	-1°-9'-26
	1260 May 06 j 17:15	0° $\text{Y}$		min. Earth dist.	1266 Dec 07 j 05:00	22° $\text{II}$ 59'07	8.01441 AU
retrograde	1260 Jul 07 j 14:03	3° $\text{Y}$ 02'55		direct	1267 Feb 12 j 02:08	19° $\text{II}$ 29'19	
	1260 Sep 09 j 23:35	30° $\text{R}$ $\text{H}$		evening set	1267 May 27 j 20:13	27° $\text{II}$ 43'45	
opposition	1260 Sep 15 j 03:26	29° $\text{H}$ 35'37	-2°-40'-57		1267 Jun 14 j 09:13	0° $\text{S}$	
min. Earth dist.	1260 Sep 15 j 03:57	29° $\text{H}$ 35'31	8.38320 AU				
direct	1260 Nov 21 j 10:31	26° $\text{H}$ 13'06		conjunction	1267 Jun 15 j 00:49	0° $\text{S}$ 05'05	0°-39'-49
	1261 Jan 27 j 13:56	0° $\text{Y}$		minimum elong	1267 Jun 15 j 00:51	0° $\text{S}$ 05'06	0°39'50
evening set	1261 Mar 02 j 02:59	3° $\text{Y}$ 51'49		max. Earth dist.	1267 Jun 15 j 08:19	0° $\text{S}$ 07'32	10.02339 AU
				morning rise	1267 Jul 03 j 05:19	2° $\text{S}$ 26'24	
conjunction	1261 Mar 19 j 08:17	6° $\text{Y}$ 02'05	-2°-13'-38	retrograde	1267 Oct 16 j 00:07	10° $\text{S}$ 40'38	
minimum elong	1261 Mar 19 j 08:16	6° $\text{Y}$ 02'05	2°13'39	opposition	1267 Dec 21 j 15:35	7° $\text{S}$ 12'19	0°-29'-19
max. Earth dist.	1261 Mar 19 j 07:41	6° $\text{Y}$ 01'54	10.32624 AU	min. Earth dist.	1267 Dec 21 j 09:46	7° $\text{S}$ 13'31	8.03966 AU
morning rise	1261 Apr 05 j 18:17	8° $\text{Y}$ 13'53		direct	1268 Feb 26 j 14:20	3° $\text{S}$ 43'13	
retrograde	1261 Jul 21 j 17:26	16° $\text{Y}$ 20'30		evening set	1268 Jun 11 j 00:02	11° $\text{S}$ 57'42	
opposition	1261 Sep 28 j 19:07	12° $\text{Y}$ 52'09	-2°-48'-28				
min. Earth dist.	1261 Sep 28 j 18:22	12° $\text{Y}$ 52'18	8.27433 AU	conjunction	1268 Jun 29 j 04:49	14° $\text{S}$ 18'26	0°-6'-49
direct	1261 Dec 04 j 16:01	9° $\text{Y}$ 28'34		minimum elong	1268 Jun 29 j 04:48	14° $\text{S}$ 18'26	0°06'51
evening set	1262 Mar 15 j 22:15	17° $\text{Y}$ 15'55		behind sun begin	1268 Jun 28 j 21:59	14° $\text{S}$ 16'14	
				behind sun end	1268 Jun 29 j 11:38	14° $\text{S}$ 20'37	
conjunction	1262 Apr 02 j 07:40	19° $\text{Y}$ 28'52	-2°-15'-50	max. Earth dist.	1268 Jun 29 j 12:18	14° $\text{S}$ 20'50	10.06274 AU
minimum elong	1262 Apr 02 j 07:41	19° $\text{Y}$ 28'53	2°15'52	morning rise	1268 Jul 17 j 08:13	16° $\text{S}$ 38'42	
max. Earth dist.	1262 Apr 02 j 08:29	19° $\text{Y}$ 29'08	10.22293 AU	asc. node	1268 Sep 14 j 08:09	22° $\text{S}$ 57'48	
morning rise	1262 Apr 19 j 21:51	21° $\text{Y}$ 43'20		retrograde	1268 Oct 29 j 05:32	24° $\text{S}$ 46'01	
retrograde	1262 Aug 05 j 02:27	29° $\text{Y}$ 57'24		opposition	1269 Jan 03 j 17:52	21° $\text{S}$ 18'47	0°12'11
opposition	1262 Oct 12 j 16:17	26° $\text{Y}$ 28'14	-2°-46'-49	min. Earth dist.	1269 Jan 03 j 12:19	21° $\text{S}$ 19'55	8.09213 AU
min. Earth dist.	1262 Oct 12 j 14:33	26° $\text{Y}$ 28'35	8.17841 AU	direct	1269 Mar 12 j 03:19	17° $\text{S}$ 49'28	
direct	1262 Dec 18 j 05:42	23° $\text{Y}$ 03'31		evening set	1269 Jun 26 j 00:11	26° $\text{S}$ 01'50	
	1263 Mar 22 j 06:38	0° $\text{S}$					
evening set	1263 Mar 30 j 03:22	0° $\text{S}$ 59'01		conjunction	1269 Jul 14 j 03:21	28° $\text{S}$ 21'02	0°26'19
				minimum elong	1269 Jul 14 j 03:20	28° $\text{S}$ 21'02	0°26'18
conjunction	1263 Apr 16 j 17:26	3° $\text{S}$ 14'36	-2°-10'-26	max. Earth dist.	1269 Jul 14 j 10:19	28° $\text{S}$ 23'17	10.12795 AU
minimum elong	1263 Apr 16 j 17:28	3° $\text{S}$ 14'37	2°10'27		1269 Jul 26 j 23:42	0° $\text{Q}$	
max. Earth dist.	1263 Apr 16 j 20:01	3° $\text{S}$ 15'26	10.13559 AU	morning rise	1269 Aug 01 j 04:05	0° $\text{Q}$ 39'26	
morning rise	1263 May 04 j 11:55	5° $\text{S}$ 31'34		retrograde	1269 Nov 12 j 02:52	8° $\text{Q}$ 38'25	
retrograde	1263 Aug 19 j 16:04	13° $\text{S}$ 50'54		opposition	1270 Jan 17 j 16:01	5° $\text{Q}$ 12'25	0°52'17
opposition	1263 Oct 26 j 17:50	10° $\text{S}$ 21'15	-2°-35'-29	min. Earth dist.	1270 Jan 17 j 10:58	5° $\text{Q}$ 13'27	8.16893 AU
min. Earth dist.	1263 Oct 26 j 15:02	10° $\text{S}$ 21'49	8.10092 AU	direct	1270 Mar 26 j 14:39	1° $\text{Q}$ 43'11	
direct	1264 Jan 01 j 02:27	6° $\text{S}$ 55'23		evening set	1270 Jul 10 j 18:20	9° $\text{Q}$ 51'30	
evening set	1264 Apr 12 j 17:23	14° $\text{S}$ 58'02					
	1264 Apr 12 j 23:32	15° $\text{S}$		conjunction	1270 Jul 28 j 18:22	12° $\text{Q}$ 08'25	0°57'21



minimum elong	1270 Jul 28 j 18:20	12°♏08'24	0°57'20	minimum elong	1276 Oct 13 j 14:48	28°♑00'41	2°14'44
max. Earth dist.	1270 Jul 29 j 00:20	12°♏10'19	10.21510 AU	max. Earth dist.	1276 Oct 13 j 13:25	28°♑00'15	10.87623 AU
morning rise	1270 Aug 15 j 15:05	14°♏24'15		morning rise	1276 Oct 30 j 08:17	29°♑59'57	
	1270 Aug 20 j 10:24	15°♏			1276 Oct 30 j 08:28	0°♍	
retrograde	1270 Nov 25 j 15:29	22°♏14'04		retrograde	1277 Feb 06 j 14:41	7°♍03'30	
opposition	1271 Jan 31 j 08:54	18°♏49'26	1°28'34	opposition	1277 Apr 16 j 15:49	3°♍45'30	2°41'03
min. Earth dist.	1271 Jan 31 j 04:07	18°♏50'24	8.26525 AU	min. Earth dist.	1277 Apr 16 j 16:32	3°♍45'22	8.92132 AU
direct	1271 Apr 09 j 22:12	15°♏20'34		direct	1277 Jun 26 j 20:11	0°♍22'51	
evening set	1271 Jul 25 j 04:08	23°♏23'11		evening set	1277 Oct 08 j 15:50	7°♍39'50	
conjunction	1271 Aug 11 j 23:57	25°♏37'18	1°24'36	conjunction	1277 Oct 25 j 10:33	9°♍38'32	2°06'57
minimum elong	1271 Aug 11 j 23:53	25°♏37'17	1°24'36	minimum elong	1277 Oct 25 j 10:34	9°♍38'32	2°06'56
max. Earth dist.	1271 Aug 12 j 05:08	25°♏38'56	10.31877 AU	max. Earth dist.	1277 Oct 25 j 08:44	9°♍38'00	10.95915 AU
morning rise	1271 Aug 29 j 15:41	27°♏50'07		morning rise	1277 Nov 11 j 01:46	11°♍36'16	
	1271 Sep 16 j 17:52	0°♎			1277 Dec 12 j 11:51	15°♍	
retrograde	1271 Dec 08 j 20:37	5°♎30'36		retrograde	1278 Feb 18 j 11:06	18°♍36'00	
opposition	1272 Feb 13 j 20:12	2°♎07'18	1°59'08	opposition	1278 Apr 28 j 20:50	15°♍18'33	2°28'11
min. Earth dist.	1272 Feb 13 j 15:37	2°♎08'12	8.37523 AU	min. Earth dist.	1278 Apr 28 j 22:34	15°♍18'13	8.99506 AU
	1272 Mar 13 j 12:01	30°♎♏			1278 May 03 j 00:29	15°♎♍	
direct	1272 Apr 22 j 23:15	28°♏39'06		direct	1278 Jul 09 j 04:06	11°♍57'07	
	1272 Jun 02 j 01:16	0°♎			1278 Sep 10 j 18:47	15°♍	
evening set	1272 Aug 07 j 03:47	6°♎34'43		evening set	1278 Oct 20 j 07:44	19°♍08'01	
conjunction	1272 Aug 24 j 18:46	8°♎45'47	1°46'47	conjunction	1278 Nov 06 j 00:26	21°♍05'28	1°54'09
minimum elong	1272 Aug 24 j 18:43	8°♎45'46	1°46'47	minimum elong	1278 Nov 06 j 00:28	21°♍05'29	1°54'08
max. Earth dist.	1272 Aug 24 j 23:26	8°♎47'15	10.43290 AU	max. Earth dist.	1278 Nov 05 j 21:29	21°♍04'36	11.02338 AU
morning rise	1272 Sep 11 j 05:06	10°♎55'26		morning rise	1278 Nov 22 j 14:16	23°♍02'10	
retrograde	1272 Dec 20 j 18:56	18°♎26'49		retrograde	1279 Mar 02 j 03:07	29°♍59'29	
opposition	1273 Feb 26 j 01:32	15°♎04'49	2°22'44	opposition	1279 May 10 j 23:27	26°♍42'23	2°09'38
min. Earth dist.	1273 Feb 25 j 21:30	15°♎05'36	8.49260 AU	min. Earth dist.	1279 May 11 j 02:46	26°♍41'46	9.04886 AU
direct	1273 May 06 j 17:07	11°♎37'30		direct	1279 Jul 21 j 05:50	23°♍22'00	
evening set	1273 Aug 20 j 16:49	19°♎25'19		evening set	1279 Oct 27 j 16:50	0°♎	
					1279 Oct 31 j 18:46	0°♎28'00	
conjunction	1273 Sep 07 j 02:49	21°♎33'21	2°03'06	conjunction	1279 Nov 17 j 10:02	2°♎24'38	1°36'59
minimum elong	1273 Sep 07 j 02:46	21°♎33'20	2°03'06	minimum elong	1279 Nov 17 j 10:05	2°♎24'38	1°36'59
max. Earth dist.	1273 Sep 07 j 06:47	21°♎34'34	10.55129 AU	max. Earth dist.	1279 Nov 17 j 05:18	2°♎23'14	11.06677 AU
morning rise	1273 Sep 24 j 07:53	23°♎39'54		morning rise	1279 Dec 03 j 23:26	4°♎20'45	
	1273 Nov 28 j 21:06	0°♑			1280 Mar 12 j 19:40	11°♎17'13	
retrograde	1274 Jan 02 j 08:51	1°♑02'46		retrograde	1280 May 22 j 00:39	8°♎00'11	1°46'15
	1274 Feb 06 j 10:51	30°♎♎		opposition	1280 May 22 j 05:13	7°♎59'20	9.08094 AU
opposition	1274 Mar 11 j 00:49	27°♎41'59	2°38'42	min. Earth dist.	1280 May 22 j 06:38	4°♎40'41	
min. Earth dist.	1274 Mar 10 j 22:18	27°♎42'28	8.61125 AU	direct	1280 Aug 01 j 06:38	4°♎40'41	
direct	1274 May 20 j 04:10	24°♎15'42		evening set	1280 Nov 11 j 02:26	11°♎43'00	
	1274 Aug 17 j 05:01	0°♑					
evening set	1274 Sep 02 j 19:06	1°♑55'25		conjunction	1280 Nov 27 j 17:01	13°♎39'15	1°16'10
conjunction	1274 Sep 20 j 00:16	4°♑00'33	2°13'09	minimum elong	1280 Nov 27 j 17:03	13°♎39'16	1°16'11
minimum elong	1274 Sep 20 j 00:15	4°♑00'32	2°13'10	max. Earth dist.	1280 Nov 27 j 11:20	13°♎37'35	11.08784 AU
max. Earth dist.	1274 Sep 20 j 02:32	4°♑01'14	10.66805 AU	morning rise	1280 Dec 14 j 06:33	15°♎35'14	
morning rise	1274 Oct 07 j 00:39	6°♑04'16		retrograde	1281 Mar 24 j 13:17	22°♎32'23	
retrograde	1275 Jan 14 j 16:25	13°♑19'31		opposition	1281 Jun 03 j 01:15	19°♎15'07	1°18'54
opposition	1275 Mar 23 j 18:41	9°♑59'50	2°46'53	min. Earth dist.	1281 Jun 03 j 05:55	19°♎14'15	9.09013 AU
min. Earth dist.	1275 Mar 23 j 17:52	10°♑00'00	8.72547 AU	direct	1281 Aug 13 j 03:21	15°♎56'21	
direct	1275 Jun 02 j 08:12	6°♑34'43		evening set	1281 Nov 22 j 08:39	22°♎56'20	
evening set	1275 Sep 15 j 11:01	14°♑06'21		conjunction	1281 Dec 08 j 23:09	24°♎52'37	0°52'28
conjunction	1275 Oct 02 j 11:49	16°♑08'55	2°16'57	minimum elong	1281 Dec 08 j 23:10	24°♎52'37	0°52'28
minimum elong	1275 Oct 02 j 11:49	16°♑08'55	2°16'57	max. Earth dist.	1281 Dec 08 j 17:37	24°♎51'00	11.08569 AU
max. Earth dist.	1275 Oct 02 j 11:54	16°♑08'56	10.77787 AU	morning rise	1281 Dec 25 j 13:09	26°♎48'50	
morning rise	1275 Oct 19 j 08:20	18°♑10'11			1282 Jan 24 j 04:07	0°♒	
retrograde	1276 Jan 26 j 17:24	25°♑18'57		retrograde	1282 Apr 05 j 09:40	3°♒48'13	
opposition	1276 Apr 04 j 07:29	22°♑00'12	2°47'31	opposition	1282 Jun 15 j 02:20	0°♒30'30	0°48'31
min. Earth dist.	1276 Apr 04 j 07:46	22°♑00'09	8.83025 AU	min. Earth dist.	1282 Jun 15 j 07:05	0°♒29'37	9.07605 AU
direct	1276 Jun 14 j 04:53	18°♑36'18			1282 Jun 22 j 01:00	30°♎♎	
evening set	1276 Sep 26 j 17:30	26°♑00'16		direct	1282 Aug 24 j 22:44	27°♎12'13	
					1282 Oct 24 j 04:33	0°♒	
conjunction	1276 Oct 13 j 14:48	28°♑00'40	2°14'44	evening set	1282 Dec 03 j 15:12	4°♒11'20	



conjunction	1282 Dec 20 j 05:52	6°☾08'01	0°26'40	direct	1288 Nov 03 j 03:57	7°☿49'36	
minimum elong	1282 Dec 20 j 05:53	6°☾08'01	0°26'40	evening set	1289 Feb 11 j 05:32	15°☿14'54	
max. Earth dist.	1282 Dec 19 j 23:55	6°☾06'16	11.06042 AU				
morning rise	1283 Jan 05 j 20:54	8°☾04'52		conjunction	1289 Feb 28 j 05:31	17°☿21'06	-1°-58'-11
retrograde	1283 Apr 17 j 09:39	15°☾08'00		minimum elong	1289 Feb 28 j 05:29	17°☿21'05	1°58'12
opposition	1283 Jun 27 j 05:14	11°☾49'34	0°16'05	max. Earth dist.	1289 Feb 28 j 00:02	17°☿19'24	10.51310 AU
min. Earth dist.	1283 Jun 27 j 10:37	11°☾48'35	9.03925 AU	morning rise	1289 Mar 17 j 10:09	19°☿28'45	
direct	1283 Sep 05 j 16:42	8°☾31'32		retrograde	1289 Jul 01 j 13:58	27°☿20'50	
evening set	1283 Dec 14 j 23:33	15°☾31'15		opposition	1289 Sep 09 j 09:11	23°☿54'26	-2°-34'-41
desc. node	1283 Dec 26 j 11:43	16°☾52'15		min. Earth dist.	1289 Sep 09 j 12:41	23°☿53'45	8.45266 AU
				direct	1289 Nov 15 j 22:20	20°☿32'34	
				evening set	1290 Feb 24 j 08:35	28°☿06'20	
					1290 Mar 11 j 12:01	0°♀	
conjunction	1283 Dec 31 j 14:41	17°☾28'40	0°00'-22				
minimum elong	1283 Dec 31 j 14:41	17°☾28'40	0°00'24				
behind sun begin	1283 Dec 31 j 07:44	17°☾26'38		conjunction	1290 Mar 13 j 11:59	0°♀15'08	-2°-10'-14
behind sun end	1283 Dec 31 j 21:38	17°☾30'42		minimum elong	1290 Mar 13 j 11:58	0°♀15'07	2°10'15
max. Earth dist.	1283 Dec 31 j 07:32	17°☾26'35	11.01281 AU	max. Earth dist.	1290 Mar 13 j 08:40	0°♀14'05	10.39138 AU
morning rise	1284 Jan 17 j 07:16	19°☾26'32		morning rise	1290 Mar 30 j 20:08	2°♀25'26	
retrograde	1284 Apr 28 j 12:09	26°☾34'56		retrograde	1290 Jul 15 j 12:20	10°♀27'08	
opposition	1284 Jul 08 j 10:38	23°☾15'32	0°-17'-18	opposition	1290 Sep 22 j 21:32	6°♀59'19	-2°-46'-3
min. Earth dist.	1284 Jul 08 j 16:48	23°☾14'24	8.98079 AU	min. Earth dist.	1290 Sep 22 j 23:26	6°♀58'57	8.33380 AU
direct	1284 Sep 16 j 11:56	19°☾57'26		direct	1290 Nov 29 j 00:56	3°♀36'12	
evening set	1284 Dec 25 j 11:31	26°☾59'21		evening set	1291 Mar 09 j 22:10	11°♀18'46	
conjunction	1285 Jan 11 j 03:37	28°☾57'52	0°-27'-40	conjunction	1291 Mar 27 j 05:38	13°♀30'19	-2°-15'-46
minimum elong	1285 Jan 11 j 03:35	28°☾57'51	0°27'42	minimum elong	1291 Mar 27 j 05:38	13°♀30'19	2°15'47
max. Earth dist.	1285 Jan 10 j 20:22	28°☾55'43	10.94406 AU	max. Earth dist.	1291 Mar 27 j 04:48	13°♀30'03	10.27629 AU
	1285 Jan 19 j 20:11	0°♊		morning rise	1291 Apr 13 j 17:42	15°♀43'22	
morning rise	1285 Jan 27 j 21:55	0°♊57'03		retrograde	1291 Jul 28 j 18:19	23°♀53'31	
retrograde	1285 May 10 j 21:53	8°♊12'09		opposition	1291 Oct 06 j 15:27	20°♀24'31	-2°-48'-48
opposition	1285 Jul 20 j 19:13	4°♊51'33	0°-50'-32	min. Earth dist.	1291 Oct 06 j 15:17	20°♀24'33	8.22463 AU
min. Earth dist.	1285 Jul 21 j 01:15	4°♊50'26	8.90206 AU	direct	1291 Dec 12 j 09:55	17°♀00'06	
direct	1285 Sep 28 j 11:14	1°♊33'09		evening set	1292 Mar 22 j 22:06	24°♀51'20	
evening set	1286 Jan 06 j 04:35	8°♊38'47					
conjunction	1286 Jan 22 j 22:04	10°♊38'45	0°-54'-14	conjunction	1292 Apr 09 j 10:04	27°♀05'38	-2°-13'-57
minimum elong	1286 Jan 22 j 22:02	10°♊38'45	0°54'15	minimum elong	1292 Apr 09 j 10:05	27°♀05'39	2°13'59
max. Earth dist.	1286 Jan 22 j 15:28	10°♊36'46	10.85586 AU	max. Earth dist.	1292 Apr 09 j 11:09	27°♀05'59	10.17411 AU
morning rise	1286 Feb 08 j 18:17	12°♊39'37		morning rise	1292 Apr 27 j 02:21	29°♀21'22	
	1286 Mar 01 j 10:12	15°♊			1292 May 02 j 05:47	0°♋	
retrograde	1286 May 23 j 14:41	20°♊02'45		retrograde	1292 Aug 12 j 06:45	7°♋38'11	
opposition	1286 Aug 02 j 08:21	16°♊40'48	-1°-22'-20	opposition	1292 Oct 19 j 14:28	4°♋08'20	-2°-42'-3
min. Earth dist.	1286 Aug 02 j 13:35	16°♊39'49	8.80530 AU	min. Earth dist.	1292 Oct 19 j 12:41	4°♋08'42	8.13117 AU
	1286 Aug 25 j 17:09	15°♋		direct	1292 Dec 25 j 01:21	0°♋42'37	
direct	1286 Oct 10 j 11:34	13°♊21'53		evening set	1293 Apr 06 j 07:30	8°♋41'51	
	1286 Nov 23 j 16:23	15°♊					
evening set	1287 Jan 18 j 04:17	20°♊32'47		conjunction	1293 Apr 24 j 00:07	10°♋58'44	-2°-4'-25
				minimum elong	1293 Apr 24 j 00:09	10°♋58'45	2°04'27
conjunction	1287 Feb 03 j 23:28	22°♊34'31	-1°-18'-58	max. Earth dist.	1293 Apr 24 j 02:49	10°♋59'36	10.09071 AU
minimum elong	1287 Feb 03 j 23:25	22°♊34'31	1°18'58	morning rise	1293 May 11 j 20:36	13°♋16'53	
max. Earth dist.	1287 Feb 03 j 17:10	22°♊32'36	10.75125 AU		1293 May 25 j 16:13	15°♋	
morning rise	1287 Feb 20 j 22:02	24°♊37'22		retrograde	1293 Aug 26 j 22:02	21°♋38'02	
	1287 Apr 14 j 06:50	0°♌		opposition	1293 Nov 02 j 17:27	18°♋07'42	-2°-25'-37
retrograde	1287 Jun 05 j 14:44	2°♌09'41		min. Earth dist.	1293 Nov 02 j 14:28	18°♋08'19	8.05899 AU
	1287 Jul 29 j 14:46	30°♌			1293 Dec 20 j 14:23	15°♌	
opposition	1287 Aug 15 j 02:48	28°♌46'16	-1°-51'-17	direct	1294 Jan 08 j 01:28	14°♌40'44	
min. Earth dist.	1287 Aug 15 j 07:24	28°♌45'24	8.69446 AU		1294 Jan 26 j 12:13	15°♌	
direct	1287 Oct 22 j 16:55	25°♌26'35		evening set	1294 Apr 21 j 01:03	22°♌46'47	
	1288 Jan 06 j 15:35	0°♍					
evening set	1288 Jan 30 j 12:19	2°♍44'08		conjunction	1294 May 08 j 22:12	25°♌05'52	-1°-47'-22
				minimum elong	1294 May 08 j 22:16	25°♌05'53	1°47'23
conjunction	1288 Feb 16 j 09:35	4°♍47'58	-1°-40'-42	max. Earth dist.	1294 May 09 j 02:11	25°♌07'10	10.03124 AU
minimum elong	1288 Feb 16 j 09:32	4°♍47'57	1°40'42	morning rise	1294 May 26 j 22:33	27°♌25'59	
max. Earth dist.	1288 Feb 16 j 03:14	4°♍46'01	10.63509 AU		1294 Jun 16 j 18:28	0°♎	
morning rise	1288 Mar 04 j 11:00	6°♍53'06		retrograde	1294 Sep 10 j 13:48	5°♎48'41	
retrograde	1288 Jun 17 j 22:58	14°♍35'13		opposition	1294 Nov 16 j 23:01	2°♎18'17	-2°00'-6
opposition	1288 Aug 27 j 02:54	11°♍10'18	-2°-15'-55	min. Earth dist.	1294 Nov 16 j 19:19	2°♎19'03	8.01267 AU
min. Earth dist.	1288 Aug 27 j 07:13	11°♍09'28	8.57495 AU		1294 Dec 17 j 11:43	30°♎	



direct	1295 Jan 22 j 07:44	28°♄50'14		minimum elong	1300 Aug 04 j 20:53	19°♄41'48	1°12'30
	1295 Feb 26 j 19:32	0°♄		max. Earth dist.	1300 Aug 05 j 04:33	19°♄44'14	10.26071 AU
evening set	1295 May 06 j 00:50	7°♄01'25		morning rise	1300 Aug 22 j 14:59	21°♄56'11	
				retrograde	1300 Dec 02 j 06:32	29°♄41'36	
conjunction	1295 May 24 j 01:55	9°♄22'07	-1°-23'-36	opposition	1301 Feb 07 j 01:48	26°♄17'36	1°45'45
minimum elong	1295 May 24 j 01:59	9°♄22'08	1°23'38	min. Earth dist.	1301 Feb 06 j 20:29	26°♄18'40	8.31621 AU
max. Earth dist.	1295 May 24 j 07:04	9°♄23'48	9.99945 AU	direct	1301 Apr 16 j 20:18	22°♄49'05	
morning rise	1295 Jun 11 j 05:11	11°♄43'29			1301 Jul 25 j 12:10	0°♄	
retrograde	1295 Sep 25 j 04:43	20°♄04'55		evening set	1301 Aug 01 j 03:51	0°♄48'35	
opposition	1295 Dec 01 j 05:38	16°♄34'50	-1°-26'-58				
min. Earth dist.	1295 Dec 01 j 01:11	16°♄35'46	7.99515 AU	conjunction	1301 Aug 18 j 21:10	3°♄01'14	1°37'10
direct	1296 Feb 05 j 18:22	13°♄05'55		minimum elong	1301 Aug 18 j 21:07	3°♄01'13	1°37'10
evening set	1296 May 20 j 04:21	21°♄20'15		max. Earth dist.	1301 Aug 19 j 03:17	3°♄03'09	10.37410 AU
				morning rise	1301 Sep 05 j 10:05	5°♄12'29	
conjunction	1296 Jun 07 j 08:09	23°♄41'44	0°-54'-37	retrograde	1301 Dec 15 j 08:35	12°♄48'34	
minimum elong	1296 Jun 07 j 08:12	23°♄41'45	0°54'38	opposition	1302 Feb 20 j 10:25	9°♄26'07	2°12'41
max. Earth dist.	1296 Jun 07 j 14:32	23°♄43'49	9.99728 AU	min. Earth dist.	1302 Feb 20 j 06:09	9°♄26'57	8.43444 AU
morning rise	1296 Jun 25 j 12:49	26°♄03'27		direct	1302 Apr 30 j 18:22	5°♄58'33	
	1296 Jul 28 j 12:26	0°♄		evening set	1302 Aug 14 j 22:40	13°♄50'36	
retrograde	1296 Oct 08 j 16:49	4°♄20'58					
opposition	1296 Dec 14 j 11:33	0°♄51'36	0°-48'-25	conjunction	1302 Sep 01 j 10:54	16°♄00'07	1°56'16
min. Earth dist.	1296 Dec 14 j 06:06	0°♄52'44	8.00764 AU	minimum elong	1302 Sep 01 j 10:51	16°♄00'06	1°56'16
	1296 Dec 24 j 22:48	30°♄		max. Earth dist.	1302 Sep 01 j 15:14	16°♄01'28	10.49482 AU
direct	1297 Feb 19 j 07:01	27°♄22'05		morning rise	1302 Sep 18 j 18:33	18°♄08'12	
	1297 Apr 15 j 05:36	0°♄		retrograde	1302 Dec 28 j 01:09	25°♄35'23	
evening set	1297 Jun 04 j 08:43	5°♄37'25		opposition	1303 Mar 05 j 13:00	22°♄14'21	2°32'12
				min. Earth dist.	1303 Mar 05 j 09:27	22°♄15'03	8.55681 AU
conjunction	1297 Jun 22 j 13:39	7°♄58'44	0°-22'-21	direct	1303 May 14 j 10:49	18°♄47'55	
minimum elong	1297 Jun 22 j 13:41	7°♄58'44	0°22'22	evening set	1303 Aug 28 j 06:38	26°♄31'53	
max. Earth dist.	1297 Jun 22 j 21:08	8°♄01'10	10.02500 AU				
morning rise	1297 Jul 10 j 18:01	10°♄19'50		conjunction	1303 Sep 14 j 13:57	28°♄38'22	2°09'12
retrograde	1297 Oct 23 j 00:52	18°♄31'13		minimum elong	1303 Sep 14 j 13:55	28°♄38'22	2°09'13
opposition	1297 Dec 28 j 15:20	15°♄02'52	0°-7'-9	max. Earth dist.	1303 Sep 14 j 17:00	28°♄39'19	10.61654 AU
min. Earth dist.	1297 Dec 28 j 08:59	15°♄04'11	8.04946 AU		1303 Sep 25 j 16:48	0°♄	
asc. node	1298 Mar 03 j 23:30	11°♄33'19		morning rise	1303 Oct 01 j 16:35	0°♄43'26	
direct	1298 Mar 05 j 20:35	11°♄33'07		retrograde	1304 Jan 09 j 12:40	8°♄02'29	
evening set	1298 Jun 19 j 10:59	19°♄47'14		opposition	1304 Mar 17 j 09:57	4°♄42'42	2°43'56
				min. Earth dist.	1304 Mar 17 j 07:01	4°♄43'16	8.67702 AU
conjunction	1298 Jul 07 j 15:18	22°♄07'27	0°11'03	direct	1304 May 26 j 19:02	1°♄17'30	
minimum elong	1298 Jul 07 j 15:18	22°♄07'27	0°11'03	evening set	1304 Sep 09 j 03:45	8°♄53'10	
behind sun begin	1298 Jul 07 j 09:52	22°♄05'43					
behind sun end	1298 Jul 07 j 20:43	22°♄09'11		conjunction	1304 Sep 26 j 06:37	10°♄56'54	2°15'50
max. Earth dist.	1298 Jul 07 j 23:30	22°♄10'05	10.08079 AU	minimum elong	1304 Sep 26 j 06:36	10°♄56'53	2°15'50
morning rise	1298 Jul 25 j 17:38	24°♄27'01		max. Earth dist.	1304 Sep 26 j 08:54	10°♄57'35	10.73316 AU
	1298 Sep 13 j 16:15	0°♄		morning rise	1304 Oct 13 j 04:49	12°♄59'16	
retrograde	1298 Nov 06 j 02:12	2°♄30'36		retrograde	1305 Jan 20 j 18:43	20°♄11'10	
	1298 Dec 31 j 01:09	30°♄		opposition	1305 Mar 30 j 01:33	16°♄52'27	2°47'56
opposition	1299 Jan 11 j 15:37	29°♄03'33	0°33'57	min. Earth dist.	1305 Mar 30 j 00:12	16°♄52'42	8.78910 AU
min. Earth dist.	1299 Jan 11 j 08:50	29°♄04'56	8.11788 AU	direct	1305 Jun 08 j 18:14	13°♄28'29	
direct	1299 Mar 20 j 08:41	25°♄33'53		evening set	1305 Sep 21 j 15:07	20°♄56'06	
	1299 Jun 02 j 12:34	0°♄					
evening set	1299 Jul 04 j 08:34	3°♄44'49		conjunction	1305 Oct 08 j 14:06	22°♄57'27	2°16'18
				minimum elong	1305 Oct 08 j 14:06	22°♄57'27	2°16'18
conjunction	1299 Jul 22 j 10:29	6°♄03'03	0°43'17	max. Earth dist.	1305 Oct 08 j 14:29	22°♄57'34	10.83888 AU
minimum elong	1299 Jul 22 j 10:27	6°♄03'02	0°43'16	morning rise	1305 Oct 25 j 08:46	24°♄57'36	
max. Earth dist.	1299 Jul 22 j 18:51	6°♄05'44	10.16099 AU		1305 Dec 13 j 20:10	0°♄	
morning rise	1299 Aug 09 j 09:12	8°♄20'18		retrograde	1306 Feb 01 j 17:48	2°♄03'32	
	1299 Oct 13 j 17:14	15°♄			1306 Mar 25 j 16:12	30°♄	
retrograde	1299 Nov 19 j 20:05	16°♄15'02		opposition	1306 Apr 11 j 12:17	28°♄45'41	2°44'36
	1299 Dec 27 j 10:32	15°♄		min. Earth dist.	1306 Apr 11 j 13:16	28°♄45'29	8.88750 AU
opposition	1300 Jan 25 j 11:19	12°♄49'28	1°12'19	direct	1306 Jun 21 j 12:15	25°♄22'54	
min. Earth dist.	1300 Jan 25 j 05:00	12°♄50'45	8.20860 AU		1306 Sep 09 j 05:13	0°♄	
direct	1300 Apr 02 j 17:08	9°♄20'14		evening set	1306 Oct 03 j 17:47	2°♄43'11	
	1300 Jun 27 j 15:25	15°♄					
evening set	1300 Jul 17 j 22:52	17°♄26'11		conjunction	1306 Oct 20 j 13:33	4°♄42'37	2°10'57
				minimum elong	1306 Oct 20 j 13:34	4°♄42'37	2°10'57
conjunction	1300 Aug 04 j 20:56	19°♄41'48	1°12'30	max. Earth dist.	1306 Oct 20 j 11:09	4°♄41'54	10.92867 AU



morning rise	1306 Nov 06 j 05:44	6°♄41'00		morning rise	1313 Jan 11 j 16:17	14°♄41'36	
retrograde	1307 Feb 13 j 14:03	13°♄42'29		retrograde	1313 Apr 23 j 12:49	21°♄48'02	
opposition	1307 Apr 23 j 19:21	10°♄25'14	2°34'31	desc. node	1313 Jun 03 j 21:38	20°♄30'22	
min. Earth dist.	1307 Apr 23 j 22:08	10°♄24'43	8.96793 AU	opposition	1313 Jul 03 j 10:38	18°♄28'31	0°-2'-36
direct	1307 Jul 04 j 00:11	7°♄03'36		min. Earth dist.	1313 Jul 03 j 16:28	18°♄27'26	8.98974 AU
evening set	1307 Oct 15 j 13:01	14°♄17'26		direct	1313 Sep 11 j 18:11	15°♄09'51	
	1307 Oct 21 j 15:00	15°♄		evening set	1313 Dec 20 j 19:35	22°♄11'16	
conjunction	1307 Nov 01 j 06:26	16°♄15'26	2°00'19	conjunction	1314 Jan 06 j 11:24	24°♄09'28	0°-15'-45
minimum elong	1307 Nov 01 j 06:28	16°♄15'26	2°00'19	minimum elong	1314 Jan 06 j 11:24	24°♄09'28	0°15'47
max. Earth dist.	1307 Nov 01 j 02:13	16°♄14'11	10.99922 AU	behind sun begin	1314 Jan 06 j 09:41	24°♄08'58	
morning rise	1307 Nov 17 j 20:58	18°♄12'35		behind sun end	1314 Jan 06 j 13:07	24°♄09'58	
retrograde	1308 Feb 25 j 07:35	25°♄11'07		max. Earth dist.	1314 Jan 06 j 04:21	24°♄07'23	10.95611 AU
opposition	1308 May 04 j 23:31	21°♄54'11	2°18'24	morning rise	1314 Jan 23 j 04:51	26°♄08'14	
min. Earth dist.	1308 May 05 j 02:58	21°♄53'32	9.02787 AU		1314 Feb 28 j 09:14	0°≈	
direct	1308 Jul 15 j 06:35	18°♄33'34		retrograde	1314 May 05 j 21:06	3°≈20'50	
evening set	1308 Oct 26 j 02:35	25°♄42'00		opposition	1314 Jul 15 j 17:59	0°≈00'10	0°-36'-7
conjunction	1308 Nov 11 j 18:33	27°♄39'02	1°45'01		1314 Jul 15 j 18:51	30°R♄	
minimum elong	1308 Nov 11 j 18:35	27°♄39'03	1°45'01	min. Earth dist.	1314 Jul 15 j 23:48	29°♄59'05	8.91747 AU
max. Earth dist.	1308 Nov 11 j 13:47	27°♄37'38	11.04859 AU	direct	1314 Sep 23 j 14:50	26°♄41'17	
morning rise	1308 Nov 28 j 08:05	29°♄35'25			1314 Nov 27 j 12:15	0°≈	
	1308 Dec 01 j 21:46	0°♄		evening set	1315 Jan 01 j 10:25	3°≈45'48	
retrograde	1309 Mar 08 j 01:59	6°♄32'28		conjunction	1315 Jan 18 j 03:14	5°≈45'18	0°-42'-47
opposition	1309 May 17 j 01:34	3°♄15'33	1°57'04	minimum elong	1315 Jan 18 j 03:13	5°≈45'18	0°42'49
min. Earth dist.	1309 May 17 j 05:44	3°♄14'47	9.06583 AU	max. Earth dist.	1315 Jan 17 j 19:44	5°≈43'03	10.87489 AU
	1309 Jul 17 j 22:38	30°R♄		morning rise	1315 Feb 03 j 22:41	7°≈45'38	
direct	1309 Jul 27 j 08:54	29°♄55'46			1315 May 07 j 13:46	15°≈	
	1309 Aug 05 j 17:01	0°♄		retrograde	1315 May 18 j 09:39	15°≈05'45	
evening set	1309 Nov 06 j 12:11	7°♄00'00			1315 May 29 j 06:27	15°R≈	
conjunction	1309 Nov 23 j 03:13	8°♄56'30	1°25'43	opposition	1315 Jul 28 j 05:26	11°≈43'47	-1°-8'-45
minimum elong	1309 Nov 23 j 03:16	8°♄56'30	1°25'44	min. Earth dist.	1315 Jul 28 j 11:20	11°≈42'41	8.82804 AU
max. Earth dist.	1309 Nov 22 j 21:38	8°♄54'51	11.07551 AU	direct	1315 Oct 05 j 13:12	8°≈24'28	
morning rise	1309 Dec 09 j 16:32	10°♄52'34			1316 Jan 08 j 12:56	15°≈	
retrograde	1310 Mar 19 j 19:18	17°♄49'37		evening set	1316 Jan 13 j 07:09	15°≈33'37	
opposition	1310 May 29 j 02:52	14°♄32'27	1°31'22	conjunction	1316 Jan 30 j 01:30	17°≈34'45	-1°-8'-30
min. Earth dist.	1310 May 29 j 08:24	14°♄31'26	9.08089 AU	minimum elong	1316 Jan 30 j 01:28	17°≈34'44	1°08'31
direct	1310 Aug 08 j 06:09	11°♄13'16		max. Earth dist.	1316 Jan 29 j 18:27	17°≈32'37	10.77792 AU
evening set	1310 Nov 17 j 19:22	18°♄14'35		morning rise	1316 Feb 15 j 23:14	19°≈36'55	
conjunction	1310 Dec 04 j 09:50	20°♄10'56	1°03'11	retrograde	1316 May 30 j 05:18	27°≈05'45	
minimum elong	1310 Dec 04 j 09:52	20°♄10'57	1°03'12	opposition	1316 Aug 08 j 21:40	23°≈42'23	-1°-39'-10
max. Earth dist.	1310 Dec 04 j 02:36	20°♄08'48	11.07933 AU	min. Earth dist.	1316 Aug 09 j 03:00	23°≈41'22	8.72471 AU
morning rise	1310 Dec 20 j 23:39	22°♄07'08		direct	1316 Oct 16 j 18:22	20°≈22'27	
retrograde	1311 Mar 31 j 13:12	29°♄05'45		evening set	1317 Jan 24 j 11:29	27°≈37'37	
opposition	1311 Jun 10 j 04:13	25°♄48'02	1°02'12	conjunction	1317 Feb 10 j 07:52	29°≈40'42	-1°-31'-42
min. Earth dist.	1311 Jun 10 j 10:47	25°♄46'50	9.07285 AU	minimum elong	1317 Feb 10 j 07:50	29°≈40'42	1°31'42
direct	1311 Aug 20 j 02:52	22°♄29'14		max. Earth dist.	1317 Feb 10 j 02:31	29°≈39'04	10.66883 AU
evening set	1311 Nov 29 j 01:50	29°♄29'04			1317 Feb 12 j 22:46	0°✠	
	1311 Dec 03 j 12:38	0°♄		morning rise	1317 Feb 27 j 08:02	1°✠45'00	
conjunction	1311 Dec 15 j 16:21	1°♄25'40	0°38'12	retrograde	1317 Jun 12 j 10:32	9°✠23'21	
minimum elong	1311 Dec 15 j 16:22	1°♄25'41	0°38'12	opposition	1317 Aug 21 j 19:17	5°✠58'35	-2°-5'-54
max. Earth dist.	1311 Dec 15 j 08:39	1°♄23'24	11.06017 AU	min. Earth dist.	1317 Aug 21 j 23:02	5°✠57'51	8.61160 AU
morning rise	1312 Jan 01 j 07:06	3°♄22'22		direct	1317 Oct 29 j 03:24	2°✠37'53	
retrograde	1312 Apr 11 j 11:02	10°♄24'07		evening set	1318 Feb 06 j 00:37	10°✠00'15	
opposition	1312 Jun 21 j 06:25	7°♄05'36	0°30'31	conjunction	1318 Feb 22 j 23:29	12°✠05'34	-1°-51'-12
min. Earth dist.	1312 Jun 21 j 12:56	7°♄04'24	9.04215 AU	minimum elong	1318 Feb 22 j 23:26	12°✠05'33	1°51'12
direct	1312 Aug 30 j 22:49	3°♄46'58		max. Earth dist.	1318 Feb 22 j 19:36	12°✠04'21	10.55230 AU
evening set	1312 Dec 09 j 09:17	10°♄46'48		morning rise	1318 Mar 12 j 02:30	14°✠12'14	
conjunction	1312 Dec 26 j 00:22	12°♄44'03	0°11'37	retrograde	1318 Jun 25 j 23:57	22°✠00'32	
minimum elong	1312 Dec 26 j 00:22	12°♄44'03	0°11'36	opposition	1318 Sep 03 j 23:06	18°✠34'23	-2°-27'-24
behind sun begin	1312 Dec 25 j 19:19	12°♄42'34		min. Earth dist.	1318 Sep 04 j 01:15	18°✠33'57	8.49376 AU
behind sun end	1312 Dec 26 j 05:25	12°♄45'31		direct	1318 Nov 10 j 17:07	15°✠12'46	
max. Earth dist.	1312 Dec 25 j 17:18	12°♄41'58	11.01865 AU	evening set	1319 Feb 18 j 23:28	22°✠43'16	



conjunction	1319 Mar 08 j 01:20	24° $\text{K}$ 51'02	-2°-5'-45	direct	1325 Jan 29 j 21:36	7° $\text{II}$ 14'06	
minimum elong	1319 Mar 08 j 01:18	24° $\text{K}$ 51'02	2°05'45	evening set	1325 May 14 j 01:01	15° $\text{II}$ 26'52	
max. Earth dist.	1319 Mar 07 j 22:34	24° $\text{K}$ 50'10	10.43386 AU				
morning rise	1319 Mar 25 j 07:48	27° $\text{K}$ 00'17		conjunction	1325 Jun 01 j 03:48	17° $\text{II}$ 47'58	-1°-7'-28
	1319 Apr 19 j 22:13	0° $\text{Y}$		minimum elong	1325 Jun 01 j 03:52	17° $\text{II}$ 47'59	1°07'29
retrograde	1319 Jul 09 j 20:03	4° $\text{Y}$ 58'23		max. Earth dist.	1325 Jun 01 j 11:08	17° $\text{II}$ 50'22	10.00807 AU
opposition	1319 Sep 17 j 09:08	1° $\text{Y}$ 30'58	-2°-42'-7	morning rise	1325 Jun 19 j 07:48	20° $\text{II}$ 09'28	
min. Earth dist.	1319 Sep 17 j 10:08	1° $\text{Y}$ 30'47	8.37689 AU	retrograde	1325 Oct 02 j 22:18	28° $\text{II}$ 28'39	
	1319 Oct 07 j 06:48	30° $\text{R}$ $\text{K}$		opposition	1325 Dec 08 j 18:23	24° $\text{II}$ 59'27	-1°-5'-18
direct	1319 Nov 23 j 15:50	28° $\text{K}$ 08'20		min. Earth dist.	1325 Dec 08 j 12:48	25° $\text{II}$ 00'37	8.01200 AU
	1320 Jan 08 j 14:03	0° $\text{Y}$		direct	1326 Feb 13 j 08:58	21° $\text{II}$ 30'45	
evening set	1320 Mar 03 j 08:53	5° $\text{Y}$ 47'30		evening set	1326 May 29 j 05:30	29° $\text{II}$ 45'28	
					1326 May 31 j 02:55	0° $\text{G}$	
conjunction	1320 Mar 20 j 14:22	7° $\text{Y}$ 57'55	-2°-14'-12				
minimum elong	1320 Mar 20 j 14:21	7° $\text{Y}$ 57'55	2°14'13	conjunction	1326 Jun 16 j 10:05	2° $\text{G}$ 06'50	0°-36'-21
max. Earth dist.	1320 Mar 20 j 12:40	7° $\text{Y}$ 57'23	10.31948 AU	minimum elong	1326 Jun 16 j 10:06	2° $\text{G}$ 06'51	0°36'23
morning rise	1320 Apr 07 j 00:44	10° $\text{Y}$ 09'53		max. Earth dist.	1326 Jun 16 j 17:09	2° $\text{G}$ 09'09	10.02212 AU
retrograde	1320 Jul 22 j 23:39	18° $\text{Y}$ 16'55		morning rise	1326 Jul 04 j 14:38	4° $\text{G}$ 28'11	
opposition	1320 Sep 30 j 01:03	14° $\text{Y}$ 48'28	-2°-48'-41	retrograde	1326 Oct 17 j 09:13	12° $\text{G}$ 42'13	
min. Earth dist.	1320 Sep 30 j 01:13	14° $\text{Y}$ 48'26	8.26711 AU	opposition	1326 Dec 22 j 23:22	9° $\text{G}$ 13'56	0°-24'-52
direct	1320 Dec 05 j 21:44	11° $\text{Y}$ 24'42		min. Earth dist.	1326 Dec 22 j 18:06	9° $\text{G}$ 15'02	8.03933 AU
evening set	1321 Mar 17 j 04:41	19° $\text{Y}$ 12'37		direct	1327 Feb 27 j 22:37	5° $\text{G}$ 44'46	
				evening set	1327 Jun 13 j 09:25	13° $\text{G}$ 59'28	
conjunction	1321 Apr 03 j 14:28	21° $\text{Y}$ 25'46	-2°-15'-36				
minimum elong	1321 Apr 03 j 14:28	21° $\text{Y}$ 25'46	2°15'37	conjunction	1327 Jul 01 j 14:04	16° $\text{G}$ 20'10	0°-3'-14
max. Earth dist.	1321 Apr 03 j 14:47	21° $\text{Y}$ 25'52	10.21543 AU	minimum elong	1327 Jul 01 j 14:04	16° $\text{G}$ 20'10	0°03'16
morning rise	1321 Apr 21 j 05:00	23° $\text{Y}$ 40'25		behind sun begin	1327 Jul 01 j 06:44	16° $\text{G}$ 17'49	
	1321 Jun 19 j 19:11	0° $\text{G}$		behind sun end	1327 Jul 01 j 21:23	16° $\text{G}$ 22'31	
retrograde	1321 Aug 06 j 09:27	1° $\text{G}$ 54'54		max. Earth dist.	1327 Jul 01 j 20:43	16° $\text{G}$ 22'18	10.06320 AU
	1321 Sep 23 j 18:00	30° $\text{R}$ $\text{Y}$		morning rise	1327 Jul 19 j 17:27	18° $\text{G}$ 40'26	
opposition	1321 Oct 13 j 22:31	28° $\text{Y}$ 25'39	-2°-46'-2	asc. node	1327 Aug 06 j 18:00	20° $\text{G}$ 53'34	
min. Earth dist.	1321 Oct 13 j 21:18	28° $\text{Y}$ 25'53	8.17065 AU	retrograde	1327 Oct 31 j 13:12	26° $\text{G}$ 47'29	
direct	1321 Dec 19 j 11:28	25° $\text{Y}$ 00'46		opposition	1328 Jan 06 j 01:38	23° $\text{G}$ 20'20	0°16'38
	1322 Mar 07 j 01:14	0° $\text{G}$		min. Earth dist.	1328 Jan 05 j 20:34	23° $\text{G}$ 21'23	8.09328 AU
evening set	1322 Mar 31 j 10:19	2° $\text{G}$ 56'53		direct	1328 Mar 13 j 12:48	19° $\text{G}$ 51'01	
				evening set	1328 Jun 27 j 09:38	28° $\text{G}$ 03'33	
conjunction	1322 Apr 18 j 00:50	5° $\text{G}$ 12'41	-2°-9'-23		1328 Jul 12 j 14:12	0° $\text{Q}$	
minimum elong	1322 Apr 18 j 00:53	5° $\text{G}$ 12'41	2°09'24				
max. Earth dist.	1322 Apr 18 j 03:41	5° $\text{G}$ 13'36	10.12779 AU	conjunction	1328 Jul 15 j 12:34	0° $\text{Q}$ 22'40	0°29'50
morning rise	1322 May 05 j 19:36	7° $\text{G}$ 29'51		minimum elong	1328 Jul 15 j 12:32	0° $\text{Q}$ 22'39	0°29'49
	1322 Jul 21 j 09:23	15° $\text{G}$		max. Earth dist.	1328 Jul 15 j 18:52	0° $\text{Q}$ 24'41	10.12966 AU
retrograde	1322 Aug 20 j 23:20	15° $\text{G}$ 49'37		morning rise	1328 Aug 02 j 13:06	2° $\text{Q}$ 40'58	
	1322 Sep 20 j 16:14	15° $\text{R}$ $\text{G}$		retrograde	1328 Nov 13 j 09:34	10° $\text{Q}$ 39'43	
opposition	1322 Oct 28 j 00:26	12° $\text{G}$ 19'52	-2°-33'-42	opposition	1329 Jan 18 j 23:47	7° $\text{Q}$ 13'51	0°56'30
min. Earth dist.	1322 Oct 27 j 21:30	12° $\text{G}$ 20'28	8.09320 AU	min. Earth dist.	1329 Jan 18 j 18:36	7° $\text{Q}$ 14'54	8.17119 AU
direct	1323 Jan 02 j 09:38	8° $\text{G}$ 53'53		direct	1329 Mar 28 j 00:00	3° $\text{Q}$ 44'39	
	1323 Mar 30 j 07:41	15° $\text{G}$		evening set	1329 Jul 12 j 03:36	11° $\text{Q}$ 53'02	
evening set	1323 Apr 15 j 01:01	16° $\text{G}$ 57'11					
				conjunction	1329 Jul 30 j 03:22	14° $\text{Q}$ 09'51	1°00'34
conjunction	1323 May 02 j 20:19	19° $\text{G}$ 15'20	-1°-55'-28	minimum elong	1329 Jul 30 j 03:19	14° $\text{Q}$ 09'50	1°00'34
minimum elong	1323 May 02 j 20:22	19° $\text{G}$ 15'21	1°55'29	max. Earth dist.	1329 Jul 30 j 09:23	14° $\text{Q}$ 11'46	10.21783 AU
max. Earth dist.	1323 May 03 j 01:26	19° $\text{G}$ 17'00	10.06184 AU		1329 Aug 05 j 16:39	15° $\text{Q}$	
morning rise	1323 May 20 j 19:01	21° $\text{G}$ 34'37		morning rise	1329 Aug 16 j 23:42	16° $\text{Q}$ 25'32	
retrograde	1323 Sep 04 j 15:04	29° $\text{G}$ 56'57		retrograde	1329 Nov 26 j 23:10	24° $\text{Q}$ 15'11	
opposition	1323 Nov 11 j 05:17	26° $\text{G}$ 27'02	-2°-11'-55	opposition	1330 Feb 01 j 16:42	20° $\text{Q}$ 50'38	1°32'18
min. Earth dist.	1323 Nov 11 j 00:46	26° $\text{G}$ 27'58	8.03938 AU	min. Earth dist.	1330 Feb 01 j 11:20	20° $\text{Q}$ 51'43	8.26847 AU
direct	1324 Jan 16 j 13:24	23° $\text{G}$ 00'00		direct	1330 Apr 11 j 06:18	17° $\text{Q}$ 21'53	
	1324 Apr 19 j 20:12	0° $\text{II}$		evening set	1330 Jul 26 j 13:06	25° $\text{Q}$ 24'28	
evening set	1324 Apr 28 j 22:46	1° $\text{II}$ 08'58					
				conjunction	1330 Aug 13 j 08:39	27° $\text{Q}$ 38'28	1°27'21
conjunction	1324 May 16 j 22:21	3° $\text{II}$ 28'57	-1°-34'-25	minimum elong	1330 Aug 13 j 08:36	27° $\text{Q}$ 38'27	1°27'21
minimum elong	1324 May 16 j 22:24	3° $\text{II}$ 28'59	1°34'27	max. Earth dist.	1330 Aug 13 j 14:31	27° $\text{Q}$ 40'19	10.32240 AU
max. Earth dist.	1324 May 17 j 05:05	3° $\text{II}$ 31'09	10.02136 AU	morning rise	1330 Aug 30 j 23:55	29° $\text{Q}$ 51'08	
morning rise	1324 Jun 04 j 00:16	5° $\text{II}$ 49'44			1330 Sep 01 j 04:42	0° $\text{np}$	
retrograde	1324 Sep 18 j 07:34	14° $\text{II}$ 11'48		retrograde	1330 Dec 10 j 05:25	7° $\text{np}$ 31'25	
opposition	1324 Nov 24 j 11:50	10° $\text{II}$ 42'04	-1°-41'-49	opposition	1331 Feb 15 j 04:02	4° $\text{np}$ 08'14	2°02'11
min. Earth dist.	1324 Nov 24 j 06:19	10° $\text{II}$ 43'13	8.01202 AU	min. Earth dist.	1331 Feb 14 j 23:09	4° $\text{np}$ 09'13	8.37925 AU



direct	1331 Apr 25 j 06:43	0° $\mathring{M}$ 40'09			1337 Aug 16 j 16:07	15° $\mathring{M}$	
evening set	1331 Aug 09 j 12:36	8° $\mathring{M}$ 35'41		evening set	1337 Oct 21 j 13:30	21° $\mathring{M}$ 04'45	
conjunction	1331 Aug 27 j 03:14	10° $\mathring{M}$ 46'37	1°48'56	conjunction	1337 Nov 07 j 06:01	23° $\mathring{M}$ 02'06	1°52'11
minimum elong	1331 Aug 27 j 03:11	10° $\mathring{M}$ 46'36	1°48'57	minimum elong	1337 Nov 07 j 06:03	23° $\mathring{M}$ 02'07	1°52'10
max. Earth dist.	1331 Aug 27 j 08:28	10° $\mathring{M}$ 48'15	10.43724 AU	max. Earth dist.	1337 Nov 07 j 02:38	23° $\mathring{M}$ 01'06	11.02863 AU
morning rise	1331 Sep 13 j 13:03	12° $\mathring{M}$ 56'07		morning rise	1337 Nov 23 j 19:55	24° $\mathring{M}$ 58'44	
retrograde	1331 Dec 23 j 02:26	20° $\mathring{M}$ 27'17			1338 Jan 13 j 09:09	0° $\mathring{Z}$	
opposition	1332 Feb 28 j 09:24	17° $\mathring{M}$ 05'25	2°24'58	retrograde	1338 Mar 03 j 09:00	1° $\mathring{Z}$ 55'47	
min. Earth dist.	1332 Feb 28 j 05:42	17° $\mathring{M}$ 06'09	8.49729 AU		1338 Apr 23 j 08:47	30° $\mathring{R}$ $\mathring{M}$	
direct	1332 May 08 j 01:26	13° $\mathring{M}$ 38'14		opposition	1338 May 12 j 06:16	28° $\mathring{M}$ 38'40	2°06'55
evening set	1332 Aug 22 j 01:17	21° $\mathring{M}$ 25'54		min. Earth dist.	1338 May 12 j 09:44	28° $\mathring{M}$ 38'01	9.05390 AU
				direct	1338 Jul 22 j 13:54	25° $\mathring{M}$ 18'19	
conjunction	1332 Sep 08 j 10:50	23° $\mathring{M}$ 33'45	2°04'33		1338 Oct 11 j 05:35	0° $\mathring{Z}$	
minimum elong	1332 Sep 08 j 10:47	23° $\mathring{M}$ 33'44	2°04'34	evening set	1338 Nov 02 j 00:02	2° $\mathring{Z}$ 23'46	
max. Earth dist.	1332 Sep 08 j 14:39	23° $\mathring{M}$ 34'56	10.55624 AU				
morning rise	1332 Sep 25 j 15:30	25° $\mathring{M}$ 40'09		conjunction	1338 Nov 18 j 15:15	4° $\mathring{Z}$ 20'20	1°34'32
	1332 Nov 04 j 05:18	0° $\mathring{Z}$		minimum elong	1338 Nov 18 j 15:17	4° $\mathring{Z}$ 20'20	1°34'32
retrograde	1333 Jan 03 j 16:24	3° $\mathring{Z}$ 02'48		max. Earth dist.	1338 Nov 18 j 10:32	4° $\mathring{Z}$ 18'57	11.07161 AU
	1333 Mar 08 j 12:57	30° $\mathring{R}$ $\mathring{M}$		morning rise	1338 Dec 05 j 04:42	6° $\mathring{Z}$ 16'23	
opposition	1333 Mar 12 j 08:46	29° $\mathring{M}$ 42'10	2°40'02	retrograde	1339 Mar 15 j 00:56	13° $\mathring{Z}$ 12'36	
min. Earth dist.	1333 Mar 12 j 06:42	29° $\mathring{M}$ 42'34	8.61653 AU	opposition	1339 May 24 j 07:06	9° $\mathring{Z}$ 55'31	1°43'00
direct	1333 May 21 j 12:22	26° $\mathring{M}$ 16'00		min. Earth dist.	1339 May 24 j 10:59	9° $\mathring{Z}$ 54'48	9.08543 AU
	1333 Jul 30 j 11:44	0° $\mathring{Z}$		direct	1339 Aug 03 j 13:04	6° $\mathring{Z}$ 36'05	
evening set	1333 Sep 04 j 02:59	3° $\mathring{Z}$ 55'26		evening set	1339 Nov 13 j 07:14	13° $\mathring{Z}$ 37'50	
conjunction	1333 Sep 21 j 07:42	6° $\mathring{Z}$ 00'25	2°13'52	conjunction	1339 Nov 29 j 21:54	15° $\mathring{Z}$ 34'02	1°13'21
minimum elong	1333 Sep 21 j 07:41	6° $\mathring{Z}$ 00'25	2°13'53	minimum elong	1339 Nov 29 j 21:56	15° $\mathring{Z}$ 34'02	1°13'21
max. Earth dist.	1333 Sep 21 j 09:22	6° $\mathring{Z}$ 00'56	10.67350 AU	max. Earth dist.	1339 Nov 29 j 17:12	15° $\mathring{Z}$ 32'39	11.09204 AU
morning rise	1333 Oct 08 j 07:53	8° $\mathring{Z}$ 04'01		morning rise	1339 Dec 16 j 11:23	17° $\mathring{Z}$ 29'57	
retrograde	1334 Jan 15 j 23:02	15° $\mathring{Z}$ 19'02		retrograde	1340 Mar 25 j 18:47	24° $\mathring{Z}$ 26'55	
opposition	1334 Mar 25 j 02:27	11° $\mathring{Z}$ 59'27	2°47'18	opposition	1340 Jun 04 j 07:26	21° $\mathring{Z}$ 09'35	1°15'15
min. Earth dist.	1334 Mar 25 j 01:24	11° $\mathring{Z}$ 59'39	8.73110 AU	min. Earth dist.	1340 Jun 04 j 11:24	21° $\mathring{Z}$ 08'51	9.09391 AU
direct	1334 Jun 03 j 16:07	8° $\mathring{Z}$ 34'27		direct	1340 Aug 14 j 09:46	17° $\mathring{Z}$ 50'51	
evening set	1334 Sep 16 j 18:21	16° $\mathring{Z}$ 05'43		evening set	1340 Nov 23 j 13:10	24° $\mathring{Z}$ 50'20	
conjunction	1334 Oct 03 j 18:53	18° $\mathring{Z}$ 08'08	2°16'56	conjunction	1340 Dec 10 j 03:41	26° $\mathring{Z}$ 46'34	0°49'22
minimum elong	1334 Oct 03 j 18:53	18° $\mathring{Z}$ 08'08	2°16'56	minimum elong	1340 Dec 10 j 03:43	26° $\mathring{Z}$ 46'35	0°49'22
max. Earth dist.	1334 Oct 03 j 19:04	18° $\mathring{Z}$ 08'11	10.78359 AU	max. Earth dist.	1340 Dec 09 j 22:29	26° $\mathring{Z}$ 45'03	11.08916 AU
morning rise	1334 Oct 20 j 15:12	20° $\mathring{Z}$ 09'18		morning rise	1340 Dec 26 j 17:45	28° $\mathring{Z}$ 42'45	
retrograde	1335 Jan 27 j 23:46	27° $\mathring{Z}$ 17'49			1341 Jan 07 j 03:52	0° $\mathring{Z}$	
opposition	1335 Apr 06 j 14:58	23° $\mathring{Z}$ 59'07	2°47'02	retrograde	1341 Apr 06 j 15:42	5° $\mathring{Z}$ 41'58	
min. Earth dist.	1335 Apr 06 j 14:29	23° $\mathring{Z}$ 59'13	8.83595 AU	opposition	1341 Jun 16 j 08:13	2° $\mathring{Z}$ 24'11	0°44'37
direct	1335 Jun 16 j 14:08	20° $\mathring{Z}$ 35'21		min. Earth dist.	1341 Jun 16 j 13:07	2° $\mathring{Z}$ 23'17	9.07912 AU
evening set	1335 Sep 29 j 00:16	27° $\mathring{Z}$ 58'51			1341 Jul 22 j 23:49	30° $\mathring{R}$ $\mathring{Z}$	
				direct	1341 Aug 26 j 03:41	29° $\mathring{Z}$ 05'56	
conjunction	1335 Oct 15 j 21:27	29° $\mathring{Z}$ 59'08	2°14'00		1341 Sep 28 j 15:00	0° $\mathring{Z}$	
minimum elong	1335 Oct 15 j 21:28	29° $\mathring{Z}$ 59'08	2°14'00	evening set	1341 Dec 04 j 19:31	6° $\mathring{Z}$ 04'37	
max. Earth dist.	1335 Oct 15 j 21:00	29° $\mathring{Z}$ 59'00	10.88194 AU				
	1335 Oct 16 j 00:21	0° $\mathring{M}$		conjunction	1341 Dec 21 j 10:08	8° $\mathring{Z}$ 01'15	0°23'25
morning rise	1335 Nov 01 j 14:40	1° $\mathring{M}$ 58'17		minimum elong	1341 Dec 21 j 10:08	8° $\mathring{Z}$ 01'15	0°23'25
retrograde	1336 Feb 08 j 22:41	9° $\mathring{M}$ 01'36		max. Earth dist.	1341 Dec 21 j 03:37	7° $\mathring{Z}$ 59'21	11.06315 AU
opposition	1336 Apr 17 j 23:15	5° $\mathring{M}$ 43'37	2°39'44	morning rise	1342 Jan 07 j 01:21	9° $\mathring{Z}$ 58'06	
min. Earth dist.	1336 Apr 17 j 23:33	5° $\mathring{M}$ 43'34	8.92689 AU	retrograde	1342 Apr 18 j 13:14	17° $\mathring{Z}$ 01'07	
direct	1336 Jun 28 j 03:22	2° $\mathring{M}$ 21'05		opposition	1342 Jun 28 j 10:50	13° $\mathring{Z}$ 42'38	0°12'05
evening set	1336 Oct 09 j 22:02	9° $\mathring{M}$ 37'30		min. Earth dist.	1342 Jun 28 j 16:39	13° $\mathring{Z}$ 41'33	9.04160 AU
				direct	1342 Sep 06 j 21:39	10° $\mathring{Z}$ 24'35	
conjunction	1336 Oct 26 j 16:36	11° $\mathring{M}$ 36'07	2°05'34	desc. node	1342 Nov 12 j 11:12	13° $\mathring{Z}$ 48'21	
minimum elong	1336 Oct 26 j 16:38	11° $\mathring{M}$ 36'07	2°05'33	evening set	1342 Dec 16 j 03:39	17° $\mathring{Z}$ 24'00	
max. Earth dist.	1336 Oct 26 j 15:18	11° $\mathring{M}$ 35'44	10.96466 AU				
morning rise	1336 Nov 12 j 07:40	13° $\mathring{M}$ 33'46		conjunction	1343 Jan 01 j 18:49	19° $\mathring{Z}$ 21'23	0°-3'-42
	1336 Nov 24 j 23:16	15° $\mathring{M}$		minimum elong	1343 Jan 01 j 18:49	19° $\mathring{Z}$ 21'23	0°03'43
retrograde	1337 Feb 19 j 16:39	20° $\mathring{M}$ 33'12		behind sun begin	1343 Jan 01 j 11:55	19° $\mathring{Z}$ 19'22	
opposition	1337 Apr 30 j 04:04	17° $\mathring{M}$ 15'46	2°26'06	behind sun end	1343 Jan 02 j 01:44	19° $\mathring{Z}$ 23'24	
min. Earth dist.	1337 Apr 30 j 06:06	17° $\mathring{M}$ 15'23	9.00044 AU	max. Earth dist.	1343 Jan 01 j 11:52	19° $\mathring{Z}$ 19'21	11.01483 AU
	1337 Jun 02 j 13:55	15° $\mathring{R}$ $\mathring{M}$		morning rise	1343 Jan 18 j 11:31	21° $\mathring{Z}$ 19'14	
direct	1337 Jul 10 j 10:06	13° $\mathring{M}$ 54'24		retrograde	1343 Apr 30 j 17:11	28° $\mathring{Z}$ 27'37	



opposition	1343 Jul 10 j 15:59	25° $\overline{3}$ 08'09	0°-21'-16	min. Earth dist.	1349 Sep 24 j 03:47	8° $\overline{Y}$ 52'09	8.33241 AU
min. Earth dist.	1343 Jul 10 j 21:46	25° $\overline{3}$ 07'05	8.98250 AU	direct	1349 Nov 30 j 04:42	5° $\overline{Y}$ 29'22	
direct	1343 Sep 18 j 18:21	21° $\overline{3}$ 50'04		evening set	1350 Mar 11 j 03:24	13° $\overline{Y}$ 12'12	
evening set	1343 Dec 27 j 15:30	28° $\overline{3}$ 51'43					
	1344 Jan 06 j 07:11	0° $\approx$		conjunction	1350 Mar 28 j 11:04	15° $\overline{Y}$ 23'50	-2°-15'-52
				minimum elong	1350 Mar 28 j 11:04	15° $\overline{Y}$ 23'50	2°15'54
conjunction	1344 Jan 13 j 07:44	0° $\approx$ 50'14	0°-30'-51	max. Earth dist.	1350 Mar 28 j 09:51	15° $\overline{Y}$ 23'27	10.27450 AU
minimum elong	1344 Jan 13 j 07:42	0° $\approx$ 50'13	0°30'52	morning rise	1350 Apr 14 j 23:19	17° $\overline{Y}$ 36'59	
max. Earth dist.	1344 Jan 13 j 01:29	0° $\approx$ 48'22	10.94553 AU	retrograde	1350 Jul 31 j 01:25	25° $\overline{Y}$ 47'21	
morning rise	1344 Jan 30 j 02:02	2° $\approx$ 49'25		opposition	1350 Oct 07 j 20:25	22° $\overline{Y}$ 18'25	-2°-48'-27
retrograde	1344 May 12 j 03:21	10° $\approx$ 04'32		min. Earth dist.	1350 Oct 07 j 20:17	22° $\overline{Y}$ 18'27	8.22254 AU
opposition	1344 Jul 22 j 00:25	6° $\approx$ 43'53	0°-54'-19	direct	1350 Dec 13 j 13:18	18° $\overline{Y}$ 54'01	
min. Earth dist.	1344 Jul 22 j 05:36	6° $\approx$ 42'55	8.90345 AU	evening set	1351 Mar 25 j 03:41	26° $\overline{Y}$ 45'36	
direct	1344 Sep 29 j 15:22	3° $\approx$ 25'31					
evening set	1345 Jan 07 j 08:39	10° $\approx$ 30'58		conjunction	1351 Apr 11 j 15:51	29° $\overline{Y}$ 00'00	-2°-13'-17
				minimum elong	1351 Apr 11 j 15:52	29° $\overline{Y}$ 00'01	2°13'18
conjunction	1345 Jan 24 j 02:11	12° $\approx$ 30'55	0°-57'-11	max. Earth dist.	1351 Apr 11 j 15:59	29° $\overline{Y}$ 00'03	10.17183 AU
minimum elong	1345 Jan 24 j 02:09	12° $\approx$ 30'54	0°57'12		1351 Apr 19 j 10:18	0° $\overline{8}$	
max. Earth dist.	1345 Jan 23 j 19:56	12° $\approx$ 29'02	10.85715 AU	morning rise	1351 Apr 29 j 08:28	1° $\overline{8}$ 15'52	
morning rise	1345 Feb 09 j 22:29	14° $\approx$ 31'45		retrograde	1351 Aug 14 j 13:08	9° $\overline{8}$ 32'51	
	1345 Feb 13 j 22:58	15° $\approx$		opposition	1351 Oct 21 j 19:39	6° $\overline{8}$ 03'05	-2°-40'-44
retrograde	1345 May 24 j 19:55	21° $\approx$ 54'55		min. Earth dist.	1351 Oct 21 j 18:29	6° $\overline{8}$ 03'19	8.12871 AU
opposition	1345 Aug 03 j 13:23	18° $\approx$ 32'56	-1°-25'-45	direct	1351 Dec 27 j 06:39	2° $\overline{8}$ 37'21	
min. Earth dist.	1345 Aug 03 j 18:22	18° $\approx$ 32'00	8.80660 AU	evening set	1352 Apr 07 j 13:37	10° $\overline{8}$ 36'59	
direct	1345 Oct 11 j 15:58	15° $\approx$ 14'01					
evening set	1346 Jan 19 j 08:30	22° $\approx$ 24'48		conjunction	1352 Apr 25 j 06:29	12° $\overline{8}$ 54'01	-2°-2'-59
				minimum elong	1352 Apr 25 j 06:32	12° $\overline{8}$ 54'02	2°03'00
conjunction	1346 Feb 05 j 03:37	24° $\approx$ 26'32	-1°-21'-34	max. Earth dist.	1352 Apr 25 j 08:05	12° $\overline{8}$ 54'32	10.08827 AU
minimum elong	1346 Feb 05 j 03:34	24° $\approx$ 26'31	1°21'34		1352 May 11 j 12:45	15° $\overline{8}$	
max. Earth dist.	1346 Feb 04 j 20:39	24° $\approx$ 24'25	10.75241 AU	morning rise	1352 May 13 j 03:22	15° $\overline{8}$ 12'18	
morning rise	1346 Feb 22 j 02:21	26° $\approx$ 29'23		retrograde	1352 Aug 28 j 03:22	23° $\overline{8}$ 33'32	
	1346 Mar 25 j 16:58	0° $\overline{H}$		opposition	1352 Nov 03 j 22:45	20° $\overline{8}$ 03'18	-2°-23'-22
retrograde	1346 Jun 06 j 20:06	4° $\overline{H}$ 01'43		min. Earth dist.	1352 Nov 03 j 20:38	20° $\overline{8}$ 03'44	8.05651 AU
opposition	1346 Aug 16 j 07:43	0° $\overline{H}$ 38'19	-1°-54'-12	direct	1353 Jan 09 j 07:10	16° $\overline{8}$ 36'18	
min. Earth dist.	1346 Aug 16 j 12:53	0° $\overline{H}$ 37'20	8.69545 AU	evening set	1353 Apr 22 j 07:35	24° $\overline{8}$ 42'45	
	1346 Aug 24 j 17:43	30° $\overline{R}$ $\approx$					
direct	1346 Oct 23 j 20:56	27° $\approx$ 18'38		conjunction	1353 May 10 j 05:03	27° $\overline{8}$ 02'00	-1°-45'-13
	1346 Dec 19 j 20:01	0° $\overline{H}$		minimum elong	1353 May 10 j 05:06	27° $\overline{8}$ 02'01	1°45'14
evening set	1347 Jan 31 j 16:35	4° $\overline{H}$ 36'08		max. Earth dist.	1353 May 10 j 08:20	27° $\overline{8}$ 03'04	10.02893 AU
				morning rise	1353 May 28 j 05:42	29° $\overline{8}$ 22'13	
conjunction	1347 Feb 17 j 13:53	6° $\overline{H}$ 39'58	-1°-42'-49		1353 Jun 02 j 04:42	0° $\overline{II}$	
minimum elong	1347 Feb 17 j 13:51	6° $\overline{H}$ 39'58	1°42'49	retrograde	1353 Sep 11 j 19:27	7° $\overline{II}$ 44'57	
max. Earth dist.	1347 Feb 17 j 07:16	6° $\overline{H}$ 37'56	10.63578 AU	opposition	1353 Nov 18 j 04:30	4° $\overline{II}$ 14'38	-1°-57'-2
morning rise	1347 Mar 06 j 15:28	8° $\overline{H}$ 45'08		min. Earth dist.	1353 Nov 18 j 01:16	4° $\overline{II}$ 15'18	8.01049 AU
retrograde	1347 Jun 20 j 03:13	16° $\overline{H}$ 27'21		direct	1354 Jan 23 j 13:23	0° $\overline{II}$ 46'33	
opposition	1347 Aug 29 j 07:48	13° $\overline{H}$ 02'27	-2°-18'-11	evening set	1354 May 07 j 07:36	8° $\overline{II}$ 58'05	
min. Earth dist.	1347 Aug 29 j 12:34	13° $\overline{H}$ 01'32	8.57532 AU				
direct	1347 Nov 05 j 08:20	9° $\overline{H}$ 41'46		conjunction	1354 May 25 j 09:01	11° $\overline{II}$ 18'55	-1°-20'-52
evening set	1348 Feb 13 j 09:56	17° $\overline{H}$ 07'08		minimum elong	1354 May 25 j 09:04	11° $\overline{II}$ 18'56	1°20'53
				max. Earth dist.	1354 May 25 j 14:09	11° $\overline{II}$ 20'35	9.99758 AU
conjunction	1348 Mar 01 j 10:09	19° $\overline{H}$ 13'23	-1°-59'-43	morning rise	1354 Jun 12 j 12:26	13° $\overline{II}$ 40'22	
minimum elong	1348 Mar 01 j 10:06	19° $\overline{H}$ 13'22	1°59'44	retrograde	1354 Sep 26 j 10:56	22° $\overline{II}$ 01'45	
max. Earth dist.	1348 Mar 01 j 05:07	19° $\overline{H}$ 11'49	10.51302 AU	opposition	1354 Dec 02 j 11:14	18° $\overline{II}$ 31'44	-1°-23'-16
morning rise	1348 Mar 18 j 14:52	21° $\overline{H}$ 21'03		min. Earth dist.	1354 Dec 02 j 06:38	18° $\overline{II}$ 32'41	7.99355 AU
retrograde	1348 Jul 02 j 18:19	29° $\overline{H}$ 13'21		direct	1355 Feb 07 j 00:10	15° $\overline{II}$ 02'47	
opposition	1348 Sep 10 j 14:00	25° $\overline{H}$ 46'57	-2°-36'-9	evening set	1355 May 22 j 11:27	23° $\overline{II}$ 17'25	
min. Earth dist.	1348 Sep 10 j 17:22	25° $\overline{H}$ 46'17	8.45218 AU				
direct	1348 Nov 17 j 03:52	22° $\overline{H}$ 25'08		conjunction	1355 Jun 09 j 15:32	25° $\overline{II}$ 38'58	0°-51'-28
evening set	1349 Feb 25 j 13:24	29° $\overline{H}$ 59'04		minimum elong	1355 Jun 09 j 15:35	25° $\overline{II}$ 38'59	0°51'29
	1349 Feb 25 j 16:25	0° $\overline{Y}$		max. Earth dist.	1355 Jun 09 j 22:20	25° $\overline{II}$ 41'12	9.99608 AU
				morning rise	1355 Jun 27 j 20:13	28° $\overline{II}$ 00'45	
conjunction	1349 Mar 14 j 17:04	2° $\overline{Y}$ 07'57	-2°-11'-5		1355 Jul 13 j 18:46	0° $\overline{9}$	
minimum elong	1349 Mar 14 j 17:03	2° $\overline{Y}$ 07'57	2°11'06	retrograde	1355 Oct 10 j 23:26	6° $\overline{9}$ 18'07	
max. Earth dist.	1349 Mar 14 j 14:07	2° $\overline{Y}$ 07'01	10.39038 AU	opposition	1355 Dec 16 j 17:10	2° $\overline{9}$ 48'47	0°-44'-19
morning rise	1349 Apr 01 j 01:18	4° $\overline{Y}$ 18'19		min. Earth dist.	1355 Dec 16 j 11:21	2° $\overline{9}$ 49'59	8.00677 AU
retrograde	1349 Jul 16 j 18:33	12° $\overline{Y}$ 20'13			1356 Jan 25 j 07:36	30° $\overline{R}$ $\overline{II}$	
opposition	1349 Sep 24 j 02:17	8° $\overline{Y}$ 52'27	-2°-46'-39	direct	1356 Feb 21 j 13:24	29° $\overline{II}$ 19'14	



	1356 Mar 19 j 16:58	0°♄		max. Earth dist.	1361 Sep 02 j 21:15	17°♄56'12	10.49787 AU
evening set	1356 Jun 05 j 16:03	7°♄34'48		morning rise	1361 Sep 19 j 23:48	20°♄02'40	
				retrograde	1361 Dec 29 j 06:35	27°♄29'37	
conjunction	1356 Jun 23 j 21:07	9°♄56'08	0°-18'-58	opposition	1362 Mar 06 j 18:18	24°♄08'33	2°33'51
minimum elong	1356 Jun 23 j 21:08	9°♄56'09	0°19'00	min. Earth dist.	1362 Mar 06 j 14:05	24°♄09'23	8.56008 AU
max. Earth dist.	1356 Jun 24 j 05:03	9°♄58'43	10.02454 AU	direct	1362 May 15 j 16:30	20°♄42'09	
morning rise	1356 Jul 12 j 01:19	12°♄17'14		evening set	1362 Aug 29 j 12:05	28°♄25'49	
retrograde	1356 Oct 24 j 06:56	20°♄28'25			1362 Sep 11 j 10:11	0°♄	
opposition	1356 Dec 29 j 21:05	17°♄00'06	0°-2'-55				
min. Earth dist.	1356 Dec 29 j 14:37	17°♄01'26	8.04938 AU	conjunction	1362 Sep 15 j 19:10	0°♄32'11	2°10'12
asc. node	1357 Jan 25 j 12:51	14°♄56'42		minimum elong	1362 Sep 15 j 19:08	0°♄32'11	2°10'12
direct	1357 Mar 07 j 02:59	13°♄30'17		max. Earth dist.	1362 Sep 15 j 23:10	0°♄33'25	10.62005 AU
evening set	1357 Jun 20 j 18:17	21°♄44'32		morning rise	1362 Oct 02 j 21:24	2°♄37'07	
				retrograde	1363 Jan 10 j 18:09	9°♄55'55	
conjunction	1357 Jul 08 j 22:29	24°♄04'42	0°14'26	opposition	1363 Mar 19 j 15:10	6°♄36'09	2°44'43
minimum elong	1357 Jul 08 j 22:29	24°♄04'42	0°14'25	min. Earth dist.	1363 Mar 19 j 12:13	6°♄36'43	8.68074 AU
behind sun begin	1357 Jul 08 j 19:24	24°♄03'43		direct	1363 May 28 j 23:27	3°♄11'00	
behind sun end	1357 Jul 09 j 01:33	24°♄05'41		evening set	1363 Sep 11 j 08:51	10°♄46'20	
max. Earth dist.	1357 Jul 09 j 06:53	24°♄07'25	10.08111 AU				
morning rise	1357 Jul 27 j 00:33	26°♄24'12		conjunction	1363 Sep 28 j 11:25	12°♄49'57	2°16'08
	1357 Aug 26 j 05:28	0°♄		minimum elong	1363 Sep 28 j 11:24	12°♄49'57	2°16'08
retrograde	1357 Nov 07 j 08:15	4°♄27'33		max. Earth dist.	1363 Sep 28 j 14:05	12°♄50'45	10.73716 AU
opposition	1358 Jan 12 j 21:26	1°♄00'31	0°38'05	morning rise	1363 Oct 15 j 09:19	14°♄52'13	
min. Earth dist.	1358 Jan 12 j 15:03	1°♄01'50	8.11864 AU	retrograde	1364 Jan 22 j 22:32	22°♄03'52	
	1358 Jan 25 j 08:43	30°♄		opposition	1364 Mar 31 j 06:45	18°♄45'12	2°47'52
direct	1358 Mar 21 j 14:19	27°♄30'47		min. Earth dist.	1364 Mar 31 j 05:43	18°♄45'24	8.79347 AU
	1358 May 14 j 17:42	0°♄		direct	1364 Jun 10 j 00:00	15°♄21'18	
evening set	1358 Jul 05 j 15:43	5°♄41'44		evening set	1364 Sep 22 j 19:46	22°♄48'32	
conjunction	1358 Jul 23 j 17:21	7°♄59'54	0°46'28	conjunction	1364 Oct 09 j 18:25	24°♄49'46	2°15'55
minimum elong	1358 Jul 23 j 17:18	7°♄59'53	0°46'27	minimum elong	1364 Oct 09 j 18:25	24°♄49'46	2°15'55
max. Earth dist.	1358 Jul 24 j 01:18	8°♄02'26	10.16213 AU	max. Earth dist.	1364 Oct 09 j 18:35	24°♄49'49	10.84371 AU
morning rise	1358 Aug 10 j 15:48	10°♄17'02		morning rise	1364 Oct 26 j 12:59	26°♄49'49	
	1358 Sep 21 j 03:54	15°♄			1364 Nov 24 j 06:35	0°♄	
retrograde	1358 Nov 21 j 02:18	18°♄11'28		retrograde	1365 Feb 02 j 22:01	3°♄55'31	
	1359 Jan 23 j 19:44	15°♄		opposition	1365 Apr 12 j 17:21	0°♄37'41	2°43'43
opposition	1359 Jan 26 j 17:03	14°♄45'55	1°16'04	min. Earth dist.	1365 Apr 12 j 18:07	0°♄37'32	8.89290 AU
min. Earth dist.	1359 Jan 26 j 11:26	14°♄47'04	8.21018 AU		1365 Apr 21 j 02:22	30°♄	
direct	1359 Apr 04 j 22:49	11°♄16'36		direct	1365 Jun 22 j 17:37	27°♄15'00	
	1359 Jun 11 j 21:32	15°♄			1365 Aug 21 j 19:16	0°♄	
evening set	1359 Jul 20 j 05:46	19°♄22'30		evening set	1365 Oct 04 j 21:50	4°♄34'47	
conjunction	1359 Aug 07 j 03:26	21°♄38'01	1°15'18	conjunction	1365 Oct 21 j 17:25	6°♄34'07	2°09'56
minimum elong	1359 Aug 07 j 03:23	21°♄38'00	1°15'18	minimum elong	1365 Oct 21 j 17:27	6°♄34'07	2°09'56
max. Earth dist.	1359 Aug 07 j 10:09	21°♄40'09	10.26259 AU	max. Earth dist.	1365 Oct 21 j 15:16	6°♄33'28	10.93461 AU
morning rise	1359 Aug 24 j 21:15	23°♄52'16		morning rise	1365 Nov 07 j 09:34	8°♄32'25	
	1359 Oct 22 j 19:13	0°♄			1366 Jan 20 j 00:16	15°♄	
retrograde	1359 Dec 04 j 11:43	1°♄37'22		retrograde	1366 Feb 14 j 17:15	15°♄33'36	
	1360 Jan 17 j 00:26	30°♄			1366 Mar 12 j 21:11	15°♄	
opposition	1360 Feb 09 j 07:24	28°♄13'22	1°48'56	opposition	1366 Apr 25 j 00:03	12°♄16'21	2°32'53
min. Earth dist.	1360 Feb 09 j 02:21	28°♄14'23	8.31847 AU	min. Earth dist.	1366 Apr 25 j 01:53	12°♄16'01	8.97424 AU
direct	1360 Apr 18 j 03:07	24°♄44'48		direct	1366 Jul 05 j 05:26	8°♄54'50	
	1360 Jul 10 j 04:30	0°♄			1366 Oct 06 j 17:14	15°♄	
evening set	1360 Aug 02 j 10:19	2°♄44'10		evening set	1366 Oct 16 j 16:32	16°♄08'07	
conjunction	1360 Aug 20 j 03:14	4°♄56'39	1°39'27	conjunction	1366 Nov 02 j 09:57	18°♄06'01	1°58'44
minimum elong	1360 Aug 20 j 03:11	4°♄56'38	1°39'27	minimum elong	1366 Nov 02 j 09:59	18°♄06'01	1°58'43
max. Earth dist.	1360 Aug 20 j 08:48	4°♄58'24	10.37660 AU	max. Earth dist.	1366 Nov 02 j 06:49	18°♄05'05	11.00581 AU
morning rise	1360 Sep 06 j 15:51	7°♄07'46		morning rise	1366 Nov 19 j 00:20	20°♄03'04	
retrograde	1360 Dec 16 j 12:03	14°♄43'35		retrograde	1367 Feb 26 j 12:23	27°♄01'19	
opposition	1361 Feb 21 j 15:54	11°♄21'07	2°15'09	opposition	1367 May 07 j 03:55	23°♄44'25	2°16'08
min. Earth dist.	1361 Feb 21 j 11:10	11°♄22'03	8.43725 AU	min. Earth dist.	1367 May 07 j 06:43	23°♄43'54	9.03447 AU
direct	1361 May 02 j 02:08	7°♄53'32		direct	1367 Jul 17 j 11:46	20°♄23'57	
evening set	1361 Aug 16 j 04:35	15°♄45'22		evening set	1367 Oct 28 j 05:42	27°♄31'50	
conjunction	1361 Sep 02 j 16:31	17°♄54'44	1°57'56	conjunction	1367 Nov 13 j 21:37	29°♄28'46	1°42'56
minimum elong	1361 Sep 02 j 16:29	17°♄54'43	1°57'56	minimum elong	1367 Nov 13 j 21:40	29°♄28'47	1°42'56



max. Earth dist.	1367 Nov 13 j 17:25	29° <del>16</del> 27'32	11.05519 AU	conjunction	1374 Jan 19 j 05:28	7° <del>33</del> 33'10	0°-45'-39
	1367 Nov 18 j 07:39	0° <del>2</del>		minimum elong	1374 Jan 19 j 05:27	7° <del>33</del> 33'09	0°45'40
morning rise	1367 Nov 30 j 11:05	1° <del>2</del> 25'05		max. Earth dist.	1374 Jan 18 j 21:47	7° <del>33</del> 30'51	10.87595 AU
retrograde	1368 Mar 09 j 05:26	8° <del>2</del> 21'52		morning rise	1374 Feb 05 j 01:03	9° <del>33</del> 33'29	
opposition	1368 May 18 j 05:54	5° <del>2</del> 05'02	1°54'15		1374 Mar 31 j 11:42	15° <del>33</del>	
min. Earth dist.	1368 May 18 j 10:14	5° <del>2</del> 04'14	9.07226 AU	retrograde	1374 May 19 j 11:47	16° <del>33</del> 53'43	
direct	1368 Jul 28 j 11:16	1° <del>2</del> 45'24			1374 Jul 09 j 02:27	15° <del>33</del>	
evening set	1368 Nov 07 j 14:54	8° <del>2</del> 49'07		opposition	1374 Jul 29 j 08:33	13° <del>33</del> 31'43	-1°-12'-7
				min. Earth dist.	1374 Jul 29 j 14:36	13° <del>33</del> 30'35	8.82850 AU
conjunction	1368 Nov 24 j 05:49	10° <del>2</del> 45'32	1°23'14	direct	1374 Oct 06 j 17:19	10° <del>33</del> 12'24	
minimum elong	1368 Nov 24 j 05:51	10° <del>2</del> 45'32	1°23'15		1374 Dec 24 j 15:59	15° <del>33</del>	
max. Earth dist.	1368 Nov 23 j 23:46	10° <del>2</del> 43'45	11.08175 AU	evening set	1375 Jan 14 j 09:21	17° <del>33</del> 21'30	
morning rise	1368 Dec 10 j 19:16	12° <del>2</del> 41'34					
retrograde	1369 Mar 20 j 21:46	19° <del>2</del> 38'25		conjunction	1375 Jan 31 j 03:50	19° <del>33</del> 22'40	-1°-11'-5
opposition	1369 May 30 j 06:55	16° <del>2</del> 21'20	1°28'07	minimum elong	1375 Jan 31 j 03:48	19° <del>33</del> 22'39	1°11'05
min. Earth dist.	1369 May 30 j 12:46	16° <del>2</del> 20'16	9.08683 AU	max. Earth dist.	1375 Jan 30 j 21:28	19° <del>33</del> 20'44	10.77775 AU
direct	1369 Aug 09 j 10:21	13° <del>2</del> 02'17		morning rise	1375 Feb 17 j 01:33	21° <del>33</del> 24'50	
evening set	1369 Nov 18 j 21:50	20° <del>2</del> 03'12		retrograde	1375 Jun 01 j 09:26	28° <del>33</del> 53'49	
				opposition	1375 Aug 11 j 00:41	25° <del>33</del> 30'24	-1°-42'-8
conjunction	1369 Dec 05 j 12:18	21° <del>2</del> 59'30	1°00'24	min. Earth dist.	1375 Aug 11 j 05:28	25° <del>33</del> 29'29	8.72400 AU
minimum elong	1369 Dec 05 j 12:20	21° <del>2</del> 59'30	1°00'24	direct	1375 Oct 18 j 20:59	22° <del>33</del> 10'27	
max. Earth dist.	1369 Dec 05 j 05:01	21° <del>2</del> 57'21	11.08491 AU	evening set	1376 Jan 26 j 13:52	29° <del>33</del> 25'37	
morning rise	1369 Dec 22 j 02:14	23° <del>2</del> 55'38			1376 Jan 31 j 07:51	0° <del>33</del>	
	1370 Feb 27 j 05:56	0° <del>33</del>					
retrograde	1370 Apr 01 j 16:48	0° <del>33</del> 54'08		conjunction	1376 Feb 12 j 10:22	1° <del>33</del> 28'44	-1°-33'-54
	1370 May 05 j 20:31	30° <del>33</del>		minimum elong	1376 Feb 12 j 10:20	1° <del>33</del> 28'43	1°33'54
opposition	1370 Jun 11 j 07:52	27° <del>33</del> 36'30	0°58'39	max. Earth dist.	1376 Feb 12 j 05:12	1° <del>33</del> 27'09	10.66751 AU
min. Earth dist.	1370 Jun 11 j 14:01	27° <del>33</del> 35'22	9.07794 AU	morning rise	1376 Feb 29 j 10:34	3° <del>33</del> 33'03	
direct	1370 Aug 21 j 07:04	24° <del>33</del> 17'51		retrograde	1376 Jun 13 j 14:12	11° <del>33</del> 11'35	
	1370 Nov 18 j 18:13	0° <del>33</del>		opposition	1376 Aug 22 j 22:14	7° <del>33</del> 46'44	-2°-8'-19
evening set	1370 Nov 30 j 04:04	1° <del>33</del> 17'19		min. Earth dist.	1376 Aug 23 j 01:43	7° <del>33</del> 46'03	8.60979 AU
				direct	1376 Oct 30 j 04:55	4° <del>33</del> 25'59	
conjunction	1370 Dec 16 j 18:43	3° <del>33</del> 13'53	0°35'13	evening set	1377 Feb 07 j 03:17	11° <del>33</del> 48'28	
minimum elong	1370 Dec 16 j 18:44	3° <del>33</del> 13'53	0°35'13				
max. Earth dist.	1370 Dec 16 j 11:46	3° <del>33</del> 11'50	11.06475 AU	conjunction	1377 Feb 24 j 02:11	13° <del>33</del> 53'48	-1°-52'-54
morning rise	1371 Jan 02 j 09:26	5° <del>33</del> 10'33		minimum elong	1377 Feb 24 j 02:08	13° <del>33</del> 53'48	1°52'54
retrograde	1371 Apr 13 j 14:14	12° <del>33</del> 12'15		max. Earth dist.	1377 Feb 23 j 21:31	13° <del>33</del> 52'22	10.54995 AU
opposition	1371 Jun 23 j 09:57	8° <del>33</del> 53'47	0°26'49	morning rise	1377 Mar 13 j 05:24	16° <del>33</del> 00'31	
min. Earth dist.	1371 Jun 23 j 15:47	8° <del>33</del> 52'43	9.04613 AU	retrograde	1377 Jun 27 j 02:47	23° <del>33</del> 49'01	
direct	1371 Sep 02 j 01:47	5° <del>33</del> 35'18		opposition	1377 Sep 05 j 02:03	20° <del>33</del> 22'46	-2°-29'-9
evening set	1371 Dec 11 j 11:26	12° <del>33</del> 34'50		min. Earth dist.	1377 Sep 05 j 04:44	20° <del>33</del> 22'15	8.49092 AU
				direct	1377 Nov 11 j 20:07	17° <del>33</del> 01'04	
conjunction	1371 Dec 28 j 02:33	14° <del>33</del> 32'03	0°08'34	evening set	1378 Feb 20 j 02:20	24° <del>33</del> 31'44	
minimum elong	1371 Dec 28 j 02:33	14° <del>33</del> 32'03	0°08'33				
behind sun begin	1371 Dec 27 j 20:26	14° <del>33</del> 30'16		conjunction	1378 Mar 09 j 04:16	26° <del>33</del> 39'35	-2°-6'-51
behind sun end	1371 Dec 28 j 08:40	14° <del>33</del> 33'50		minimum elong	1378 Mar 09 j 04:14	26° <del>33</del> 39'35	2°06'51
max. Earth dist.	1371 Dec 27 j 19:41	14° <del>33</del> 30'02	11.02206 AU	max. Earth dist.	1378 Mar 09 j 00:37	26° <del>33</del> 38'26	10.43058 AU
morning rise	1372 Jan 13 j 18:29	16° <del>33</del> 29'35		morning rise	1378 Mar 26 j 11:00	28° <del>33</del> 48'55	
desc. node	1372 Apr 23 j 19:50	23° <del>33</del> 35'59			1378 Apr 05 j 05:39	0° <del>33</del>	
retrograde	1372 Apr 24 j 17:10	23° <del>33</del> 36'02		retrograde	1378 Jul 10 j 23:43	6° <del>33</del> 47'12	
opposition	1372 Jul 04 j 14:06	20° <del>33</del> 16'33	0°-6'-21	opposition	1378 Sep 18 j 12:10	3° <del>33</del> 19'43	-2°-43'-5
min. Earth dist.	1372 Jul 04 j 20:02	20° <del>33</del> 15'27	8.99255 AU	min. Earth dist.	1378 Sep 18 j 13:58	3° <del>33</del> 19'21	8.37320 AU
direct	1372 Sep 12 j 21:01	16° <del>33</del> 58'00			1378 Nov 17 j 07:36	30° <del>33</del>	
evening set	1372 Dec 21 j 21:48	23° <del>33</del> 59'10		direct	1378 Nov 24 j 18:16	29° <del>33</del> 56'56	
					1378 Dec 02 j 05:01	0° <del>33</del>	
conjunction	1373 Jan 07 j 13:33	25° <del>33</del> 57'21	0°-18'-46	evening set	1379 Mar 05 j 11:57	7° <del>33</del> 36'21	
minimum elong	1373 Jan 07 j 13:33	25° <del>33</del> 57'21	0°18'48				
max. Earth dist.	1373 Jan 07 j 05:44	25° <del>33</del> 55'02	10.95837 AU	conjunction	1379 Mar 22 j 17:40	9° <del>33</del> 46'52	-2°-14'-38
morning rise	1373 Jan 24 j 07:11	27° <del>33</del> 56'07		minimum elong	1379 Mar 22 j 17:40	9° <del>33</del> 46'52	2°14'39
	1373 Feb 11 j 15:28	0° <del>33</del>		max. Earth dist.	1379 Mar 22 j 15:50	9° <del>33</del> 46'17	10.31546 AU
retrograde	1373 May 06 j 23:24	5° <del>33</del> 08'45		morning rise	1379 Apr 09 j 04:17	11° <del>33</del> 58'56	
opposition	1373 Jul 16 j 21:14	1° <del>33</del> 48'06	0°-39'-44	retrograde	1379 Jul 25 j 03:01	20° <del>33</del> 06'10	
min. Earth dist.	1373 Jul 17 j 03:44	1° <del>33</del> 46'53	8.91912 AU	opposition	1379 Oct 02 j 04:09	16° <del>33</del> 37'37	-2°-48'-47
	1373 Aug 11 j 10:02	30° <del>33</del>		min. Earth dist.	1379 Oct 02 j 04:42	16° <del>33</del> 37'30	8.26279 AU
direct	1373 Sep 24 j 16:32	28° <del>33</del> 29'16		direct	1379 Dec 08 j 00:57	13° <del>33</del> 13'43	
	1373 Nov 06 j 14:59	0° <del>33</del>		evening set	1380 Mar 18 j 08:06	21° <del>33</del> 01'56	
evening set	1374 Jan 02 j 12:37	5° <del>33</del> 33'40					



conjunction	1380 Apr 04 j 18:16	23° $\Upsilon$ 15'13	-2°-15'-19	opposition	1385 Dec 24 j 03:16	11° $\Theta$ 05'55	0°-20'-56
minimum elong	1380 Apr 04 j 18:17	23° $\Upsilon$ 15'13	2°15'20	min. Earth dist.	1385 Dec 23 j 22:14	11° $\Theta$ 06'58	8.04059 AU
max. Earth dist.	1380 Apr 04 j 19:01	23° $\Upsilon$ 15'27	10.21085 AU	direct	1386 Mar 01 j 04:13	7° $\Theta$ 36'43	
morning rise	1380 Apr 22 j 08:59	25° $\Upsilon$ 29'59		evening set	1386 Jun 14 j 14:38	15° $\Theta$ 51'28	
	1380 May 31 j 10:31	0° $\mathcal{B}$					
retrograde	1380 Aug 07 j 12:28	3° $\mathcal{B}$ 44'40		conjunction	1386 Jul 02 j 19:13	18° $\Theta$ 12'08	0°00'00
opposition	1380 Oct 15 j 01:39	0° $\mathcal{B}$ 15'18	-2°-45'-14	minimum elong	1386 Jul 02 j 19:14	18° $\Theta$ 12'08	0°00'01
min. Earth dist.	1380 Oct 15 j 00:16	0° $\mathcal{B}$ 15'35	8.16589 AU	behind sun begin	1386 Jul 02 j 15:01	18° $\Theta$ 10'48	
	1380 Oct 18 j 05:19	30° $\mathcal{R}\Upsilon$		behind sun end	1386 Jul 02 j 23:27	18° $\Theta$ 13'27	
direct	1380 Dec 20 j 15:33	26° $\Upsilon$ 50'18		asc. node	1386 Jul 02 j 19:23	18° $\Theta$ 12'10	
	1381 Feb 18 j 20:55	0° $\mathcal{B}$		max. Earth dist.	1386 Jul 03 j 01:37	18° $\Theta$ 14'10	10.06517 AU
evening set	1381 Apr 01 j 14:12	4° $\mathcal{B}$ 46'47		morning rise	1386 Jul 20 j 22:33	20° $\Theta$ 32'19	
				retrograde	1386 Nov 01 j 16:08	28° $\Theta$ 39'04	
conjunction	1381 Apr 19 j 05:05	7° $\mathcal{B}$ 02'44	-2°-8'-21	opposition	1387 Jan 07 j 05:24	25° $\Theta$ 12'00	0°20'34
minimum elong	1381 Apr 19 j 05:07	7° $\mathcal{B}$ 02'45	2°08'23	min. Earth dist.	1387 Jan 07 j 00:06	25° $\Theta$ 13'05	8.09576 AU
max. Earth dist.	1381 Apr 19 j 08:19	7° $\mathcal{B}$ 03'47	10.12292 AU	direct	1387 Mar 15 j 17:05	21° $\Theta$ 42'41	
morning rise	1381 May 06 j 23:59	9° $\mathcal{B}$ 20'01		evening set	1387 Jun 29 j 14:46	29° $\Theta$ 55'13	
	1381 Jun 26 j 20:52	15° $\mathcal{B}$			1387 Jun 30 j 05:55	0° $\mathcal{Q}$	
retrograde	1381 Aug 22 j 02:41	17° $\mathcal{B}$ 39'59					
	1381 Oct 18 j 21:33	15° $\mathcal{R}\mathcal{B}$		conjunction	1387 Jul 17 j 17:37	2° $\mathcal{Q}$ 14'17	0°32'54
opposition	1381 Oct 29 j 03:42	14° $\mathcal{B}$ 10'09	-2°-31'-59	minimum elong	1387 Jul 17 j 17:36	2° $\mathcal{Q}$ 14'16	0°32'53
min. Earth dist.	1381 Oct 29 j 00:23	14° $\mathcal{B}$ 10'49	8.08834 AU	max. Earth dist.	1387 Jul 18 j 00:04	2° $\mathcal{Q}$ 16'21	10.13247 AU
direct	1382 Jan 03 j 12:39	10° $\mathcal{B}$ 44'04		morning rise	1387 Aug 04 j 17:53	4° $\mathcal{Q}$ 32'29	
	1382 Mar 15 j 09:48	15° $\mathcal{B}$		retrograde	1387 Nov 15 j 13:52	12° $\mathcal{Q}$ 30'57	
evening set	1382 Apr 16 j 05:20	18° $\mathcal{B}$ 47'45		opposition	1388 Jan 21 j 03:24	9° $\mathcal{Q}$ 05'10	1°00'10
				min. Earth dist.	1388 Jan 20 j 21:46	9° $\mathcal{Q}$ 06'19	8.17422 AU
conjunction	1382 May 04 j 00:54	21° $\mathcal{B}$ 06'04	-1°-53'-45	direct	1388 Mar 29 j 03:40	5° $\mathcal{Q}$ 36'03	
minimum elong	1382 May 04 j 00:58	21° $\mathcal{B}$ 06'05	1°53'46	evening set	1388 Jul 13 j 08:32	13° $\mathcal{Q}$ 44'25	
max. Earth dist.	1382 May 04 j 06:04	21° $\mathcal{B}$ 07'45	10.05717 AU		1388 Jul 23 j 08:16	15° $\mathcal{Q}$	
morning rise	1382 May 21 j 23:48	23° $\mathcal{B}$ 25'29					
	1382 Jul 22 j 10:34	0° $\mathcal{I}$		conjunction	1388 Jul 31 j 08:09	16° $\mathcal{Q}$ 01'09	1°03'21
retrograde	1382 Sep 05 j 20:12	1° $\mathcal{I}$ 47'59		minimum elong	1388 Jul 31 j 08:06	16° $\mathcal{Q}$ 01'08	1°03'21
	1382 Oct 21 j 19:05	30° $\mathcal{R}\mathcal{B}$		max. Earth dist.	1388 Jul 31 j 14:44	16° $\mathcal{Q}$ 03'15	10.22097 AU
opposition	1382 Nov 12 j 08:50	28° $\mathcal{B}$ 18'02	-2°-9'-23	morning rise	1388 Aug 18 j 04:04	18° $\mathcal{Q}$ 16'43	
min. Earth dist.	1382 Nov 12 j 04:14	28° $\mathcal{B}$ 18'59	8.03503 AU	retrograde	1388 Nov 28 j 03:33	26° $\mathcal{Q}$ 06'09	
direct	1383 Jan 17 j 15:35	24° $\mathcal{B}$ 50'55		opposition	1389 Feb 02 j 20:27	22° $\mathcal{Q}$ 41'43	1°35'30
	1383 Apr 06 j 13:18	0° $\mathcal{I}$		min. Earth dist.	1389 Feb 02 j 15:00	22° $\mathcal{Q}$ 42'49	8.27172 AU
evening set	1383 May 01 j 03:33	3° $\mathcal{I}$ 00'18		direct	1389 Apr 12 j 10:06	19° $\mathcal{Q}$ 13'03	
				evening set	1389 Jul 27 j 17:43	27° $\mathcal{Q}$ 15'36	
conjunction	1383 May 19 j 03:19	5° $\mathcal{I}$ 20'26	-1°-32'-5				
minimum elong	1383 May 19 j 03:22	5° $\mathcal{I}$ 20'27	1°32'07	conjunction	1389 Aug 14 j 13:00	29° $\mathcal{Q}$ 29'29	1°29'42
max. Earth dist.	1383 May 19 j 09:38	5° $\mathcal{I}$ 22'30	10.01761 AU	minimum elong	1389 Aug 14 j 12:56	29° $\mathcal{Q}$ 29'28	1°29'42
morning rise	1383 Jun 06 j 05:29	7° $\mathcal{I}$ 41'20		max. Earth dist.	1389 Aug 14 j 19:12	29° $\mathcal{Q}$ 31'27	10.32565 AU
retrograde	1383 Sep 20 j 13:15	16° $\mathcal{I}$ 03'28			1389 Aug 18 j 13:39	0° $\mathcal{P}$	
opposition	1383 Nov 26 j 15:38	12° $\mathcal{I}$ 33'45	-1°-38'-35	morning rise	1389 Sep 01 j 03:50	1° $\mathcal{P}$ 42'02	
min. Earth dist.	1383 Nov 26 j 10:29	12° $\mathcal{I}$ 34'49	8.00903 AU	retrograde	1389 Dec 11 j 08:50	9° $\mathcal{P}$ 22'11	
direct	1384 Feb 01 j 01:01	9° $\mathcal{I}$ 05'42		opposition	1390 Feb 16 j 07:49	5° $\mathcal{P}$ 59'07	2°04'46
evening set	1384 May 15 j 06:19	17° $\mathcal{I}$ 18'52		min. Earth dist.	1390 Feb 16 j 03:27	6° $\mathcal{P}$ 00'00	8.38257 AU
				direct	1390 Apr 26 j 11:01	2° $\mathcal{P}$ 31'08	
conjunction	1384 Jun 02 j 09:11	19° $\mathcal{I}$ 40'02	-1°-4'-39	evening set	1390 Aug 10 j 17:03	10° $\mathcal{P}$ 26'37	
minimum elong	1384 Jun 02 j 09:14	19° $\mathcal{I}$ 40'03	1°04'41				
max. Earth dist.	1384 Jun 02 j 15:50	19° $\mathcal{I}$ 42'13	10.00613 AU	conjunction	1390 Aug 28 j 07:18	12° $\mathcal{P}$ 37'26	1°50'45
morning rise	1384 Jun 20 j 13:22	22° $\mathcal{I}$ 01'37		minimum elong	1390 Aug 28 j 07:15	12° $\mathcal{P}$ 37'25	1°50'45
	1384 Sep 14 j 20:10	0° $\mathcal{\Theta}$		max. Earth dist.	1390 Aug 28 j 12:04	12° $\mathcal{P}$ 38'56	10.44049 AU
retrograde	1384 Oct 04 j 03:03	0° $\mathcal{\Theta}$ 20'39		morning rise	1390 Sep 14 j 16:49	14° $\mathcal{P}$ 46'49	
	1384 Oct 23 j 08:53	30° $\mathcal{R}\mathcal{I}$		retrograde	1390 Dec 24 j 06:35	22° $\mathcal{P}$ 17'52	
opposition	1384 Dec 09 j 22:18	26° $\mathcal{I}$ 51'32	-1°-1'-35	opposition	1391 Mar 01 j 13:10	18° $\mathcal{P}$ 56'08	2°26'49
min. Earth dist.	1384 Dec 09 j 17:14	26° $\mathcal{I}$ 52'35	8.01119 AU	min. Earth dist.	1391 Mar 01 j 10:06	18° $\mathcal{P}$ 56'44	8.50057 AU
direct	1385 Feb 14 j 14:02	23° $\mathcal{I}$ 22'45		direct	1391 May 10 j 04:49	15° $\mathcal{P}$ 29'02	
	1385 May 17 j 10:24	0° $\mathcal{\Theta}$		evening set	1391 Aug 24 j 05:30	23° $\mathcal{P}$ 16'38	
evening set	1385 May 30 j 10:55	1° $\mathcal{\Theta}$ 37'41					
conjunction	1385 Jun 17 j 15:28	3° $\mathcal{\Theta}$ 59'03	0°-33'-15	conjunction	1391 Sep 10 j 14:38	25° $\mathcal{P}$ 24'23	2°05'45
minimum elong	1385 Jun 17 j 15:30	3° $\mathcal{\Theta}$ 59'04	0°33'17	minimum elong	1391 Sep 10 j 14:36	25° $\mathcal{P}$ 24'23	2°05'45
max. Earth dist.	1385 Jun 17 j 21:56	4° $\mathcal{\Theta}$ 01'09	10.02244 AU	max. Earth dist.	1391 Sep 10 j 17:36	25° $\mathcal{P}$ 25'18	10.55939 AU
morning rise	1385 Jul 05 j 20:06	6° $\mathcal{\Theta}$ 20'24		morning rise	1391 Sep 27 j 19:07	27° $\mathcal{P}$ 30'42	
retrograde	1385 Oct 18 j 12:18	14° $\mathcal{\Theta}$ 34'08			1391 Oct 19 j 06:46	0° $\mathcal{\Xi}$	
				retrograde	1392 Jan 05 j 19:16	4° $\mathcal{\Xi}$ 53'15	



opposition	1392 Mar 13 j 12:37	1°♂32'42	2°41'06	opposition	1398 May 25 j 10:41	11°♂43'59	1°39'58
min. Earth dist.	1392 Mar 13 j 10:30	1°♂33'07	8.61963 AU	min. Earth dist.	1398 May 25 j 13:49	11°♂43'24	9.08646 AU
	1392 Apr 03 j 03:51	30°♂06'39		direct	1398 Aug 04 j 17:08	8°♂24'34	
direct	1392 May 22 j 16:40	28°♂06'39		evening set	1398 Nov 14 j 09:30	15°♂26'01	
	1392 Jul 10 j 07:07	0°♂					
evening set	1392 Sep 05 j 06:47	5°♂45'58		conjunction	1398 Dec 01 j 00:13	17°♂22'12	1°10'42
				minimum elong	1398 Dec 01 j 00:15	17°♂22'12	1°10'43
conjunction	1392 Sep 22 j 11:14	7°♂50'51	2°14'25	max. Earth dist.	1398 Nov 30 j 20:07	17°♂21'00	11.09294 AU
minimum elong	1392 Sep 22 j 11:12	7°♂50'50	2°14'25	morning rise	1398 Dec 17 j 13:42	19°♂18'06	
max. Earth dist.	1392 Sep 22 j 12:44	7°♂51'18	10.67647 AU	retrograde	1399 Mar 27 j 22:44	26°♂15'02	
morning rise	1392 Oct 09 j 11:12	9°♂54'22		opposition	1399 Jun 06 j 11:02	22°♂57'38	1°11'52
retrograde	1393 Jan 17 j 01:37	17°♂09'20		min. Earth dist.	1399 Jun 06 j 15:01	22°♂56'55	9.09464 AU
opposition	1393 Mar 26 j 06:17	13°♂49'48	2°47'34	direct	1399 Aug 16 j 12:36	19°♂38'55	
min. Earth dist.	1393 Mar 26 j 04:34	13°♂50'08	8.73392 AU	evening set	1399 Nov 25 j 15:22	26°♂38'06	
direct	1393 Jun 04 j 21:33	10°♂24'55					
evening set	1393 Sep 17 j 21:48	17°♂55'59		conjunction	1399 Dec 12 j 05:48	28°♂34'19	0°46'29
				minimum elong	1399 Dec 12 j 05:49	28°♂34'20	0°46'30
conjunction	1393 Oct 04 j 22:14	19°♂58'20	2°16'49	max. Earth dist.	1399 Dec 12 j 00:14	28°♂32'41	11.08983 AU
minimum elong	1393 Oct 04 j 22:14	19°♂58'20	2°16'49		1399 Dec 24 j 10:28	0°♂	
max. Earth dist.	1393 Oct 04 j 23:10	19°♂58'37	10.78628 AU	morning rise	1399 Dec 28 j 20:02	0°♂30'31	
morning rise	1393 Oct 21 j 18:18	21°♂59'25		retrograde	1400 Apr 07 j 17:06	7°♂29'44	
retrograde	1394 Jan 29 j 04:51	29°♂07'52		opposition	1400 Jun 17 j 11:49	4°♂11'52	0°41'00
opposition	1394 Apr 07 j 18:46	25°♂49'13	2°46'30	min. Earth dist.	1400 Jun 17 j 17:00	4°♂10'55	9.07970 AU
min. Earth dist.	1394 Apr 07 j 18:00	25°♂49'22	8.83841 AU	direct	1400 Aug 27 j 06:12	0°♂53'36	
direct	1394 Jun 17 j 17:33	22°♂25'33		evening set	1400 Dec 05 j 21:30	7°♂52'04	
evening set	1394 Sep 30 j 03:30	29°♂48'47					
	1394 Oct 01 j 17:46	0°♂		conjunction	1400 Dec 22 j 12:09	9°♂48'41	0°20'25
				minimum elong	1400 Dec 22 j 12:09	9°♂48'41	0°20'24
conjunction	1394 Oct 17 j 00:35	1°♂49'01	2°13'16	max. Earth dist.	1400 Dec 22 j 05:44	9°♂46'48	11.06369 AU
minimum elong	1394 Oct 17 j 00:35	1°♂49'02	2°13'15	morning rise	1401 Jan 08 j 03:33	11°♂45'32	
max. Earth dist.	1394 Oct 17 j 00:37	1°♂49'02	10.88422 AU	retrograde	1401 Apr 19 j 16:24	18°♂48'36	
morning rise	1394 Nov 02 j 17:37	3°♂48'08		opposition	1401 Jun 29 j 14:11	15°♂30'02	0°08'22
retrograde	1395 Feb 10 j 01:26	10°♂51'20		min. Earth dist.	1401 Jun 29 j 19:38	15°♂29'02	9.04207 AU
opposition	1395 Apr 20 j 03:08	7°♂33'23	2°38'27	direct	1401 Sep 08 j 01:52	12°♂11'58	
min. Earth dist.	1395 Apr 20 j 03:54	7°♂33'15	8.92895 AU	desc. node	1401 Oct 02 j 12:00	12°♂41'25	
direct	1395 Jun 30 j 06:05	4°♂10'54		evening set	1401 Dec 17 j 05:36	19°♂11'12	
evening set	1395 Oct 12 j 01:03	11°♂27'03					
				conjunction	1402 Jan 02 j 20:54	21°♂08'35	0°-6'-43
conjunction	1395 Oct 28 j 19:24	13°♂25'36	2°04'14	minimum elong	1402 Jan 02 j 20:55	21°♂08'35	0°06'45
minimum elong	1395 Oct 28 j 19:26	13°♂25'37	2°04'13	behind sun begin	1402 Jan 02 j 14:24	21°♂06'41	
max. Earth dist.	1395 Oct 28 j 17:39	13°♂25'05	10.96655 AU	behind sun end	1402 Jan 03 j 03:26	21°♂10'30	
	1395 Nov 11 j 02:52	15°♂		max. Earth dist.	1402 Jan 02 j 15:01	21°♂06'52	11.01522 AU
morning rise	1395 Nov 14 j 10:30	15°♂23'14		morning rise	1402 Jan 19 j 13:36	23°♂06'26	
retrograde	1396 Feb 21 j 19:19	22°♂22'37			1402 Apr 14 j 08:50	0°♂	
opposition	1396 May 01 j 07:59	19°♂05'09	2°24'09	retrograde	1402 May 01 j 20:24	0°♂14'54	
min. Earth dist.	1396 May 01 j 10:16	19°♂04'44	9.00216 AU		1402 May 19 j 11:40	30°♂♂	
direct	1396 Jul 11 j 14:53	15°♂43'48		opposition	1402 Jul 11 j 19:08	26°♂55'22	0°-24'-57
evening set	1396 Oct 22 j 16:11	22°♂53'51		min. Earth dist.	1402 Jul 11 j 23:56	26°♂54'28	8.98291 AU
				direct	1402 Sep 19 j 20:47	23°♂37'18	
conjunction	1396 Nov 08 j 08:37	24°♂51'10	1°50'20		1402 Dec 23 j 03:14	0°♂	
minimum elong	1396 Nov 08 j 08:39	24°♂51'11	1°50'20	evening set	1402 Dec 28 j 17:30	0°♂38'49	
max. Earth dist.	1396 Nov 08 j 05:09	24°♂50'09	11.03024 AU				
morning rise	1396 Nov 24 j 22:37	26°♂47'47		conjunction	1403 Jan 14 j 09:46	2°♂37'19	0°-33'-47
	1396 Dec 24 j 14:56	0°♂		minimum elong	1403 Jan 14 j 09:45	2°♂37'18	0°33'49
retrograde	1397 Mar 04 j 11:44	3°♂44'47		max. Earth dist.	1403 Jan 14 j 04:05	2°♂35'37	10.94599 AU
opposition	1397 May 13 j 10:00	0°♂27'35	2°04'22	morning rise	1403 Jan 31 j 04:06	4°♂36'29	
min. Earth dist.	1397 May 13 j 12:52	0°♂27'04	9.05531 AU	retrograde	1403 May 14 j 06:37	11°♂51'44	
	1397 May 19 j 15:42	30°♂♂		opposition	1403 Jul 24 j 03:36	8°♂31'02	0°-57'-48
direct	1397 Jul 23 j 17:43	27°♂07'16		min. Earth dist.	1403 Jul 24 j 08:18	8°♂30'09	8.90414 AU
	1397 Sep 23 j 10:45	0°♂		direct	1403 Oct 01 j 17:54	5°♂12'42	
evening set	1397 Nov 03 j 02:26	4°♂12'23		evening set	1404 Jan 09 j 10:43	12°♂18'02	
conjunction	1397 Nov 19 j 17:45	6°♂08'56	1°32'15	conjunction	1404 Jan 26 j 04:12	14°♂17'58	0°-59'-54
minimum elong	1397 Nov 19 j 17:48	6°♂08'57	1°32'15	minimum elong	1404 Jan 26 j 04:10	14°♂17'57	0°59'55
max. Earth dist.	1397 Nov 19 j 13:55	6°♂07'48	11.07289 AU	max. Earth dist.	1404 Jan 25 j 21:44	14°♂16'01	10.85815 AU
morning rise	1397 Dec 06 j 07:12	8°♂04'59			1404 Feb 01 j 00:01	15°♂	
retrograde	1398 Mar 16 j 04:21	15°♂01'10		morning rise	1404 Feb 12 j 00:40	16°♂18'49	



retrograde	1404 May 25 j 23:21	23° <del>44</del> 42'03		retrograde	1410 Aug 15 j 14:41	11° <del>8</del> 19'42	
opposition	1404 Aug 04 j 16:28	20° <del>44</del> 20'04	-1°-28'-53	opposition	1410 Oct 22 j 21:35	7° <del>8</del> 50'02	-2°-39'-27
min. Earth dist.	1404 Aug 04 j 21:39	20° <del>44</del> 19'05	8.80805 AU	min. Earth dist.	1410 Oct 22 j 21:12	7° <del>8</del> 50'07	8.13041 AU
direct	1404 Oct 12 j 17:39	17° <del>44</del> 01'10		direct	1410 Dec 28 j 08:46	4° <del>8</del> 24'19	
evening set	1405 Jan 20 j 10:41	24° <del>44</del> 11'50		evening set	1411 Apr 09 j 16:07	12° <del>8</del> 23'58	
conjunction	1405 Feb 06 j 05:48	26° <del>44</del> 13'32	-1°-23'-56	conjunction	1411 Apr 27 j 09:17	14° <del>8</del> 41'03	-2°-1'-38
minimum elong	1405 Feb 06 j 05:45	26° <del>44</del> 13'31	1°23'57	minimum elong	1411 Apr 27 j 09:20	14° <del>8</del> 41'04	2°01'40
max. Earth dist.	1405 Feb 05 j 22:54	26° <del>44</del> 11'26	10.75426 AU	max. Earth dist.	1411 Apr 27 j 10:37	14° <del>8</del> 41'28	10.08992 AU
morning rise	1405 Feb 23 j 04:40	28° <del>44</del> 16'22			1411 Apr 29 j 19:39	15° <del>8</del>	
	1405 Mar 10 j 02:01	0° <del>44</del>		morning rise	1411 May 15 j 06:26	16° <del>8</del> 59'23	
retrograde	1405 Jun 07 j 21:34	5° <del>44</del> 48'42		retrograde	1411 Aug 30 j 05:37	25° <del>8</del> 20'23	
opposition	1405 Aug 17 j 10:27	2° <del>44</del> 25'18	-1°-56'-51	opposition	1411 Nov 06 j 00:30	21° <del>8</del> 50'15	-2°-21'-18
min. Earth dist.	1405 Aug 17 j 15:47	2° <del>44</del> 24'17	8.69770 AU	min. Earth dist.	1411 Nov 05 j 22:44	21° <del>8</del> 50'37	8.05800 AU
	1405 Sep 21 j 23:43	30° <del>44</del>		direct	1412 Jan 11 j 08:58	18° <del>8</del> 23'16	
direct	1405 Oct 24 j 23:42	29° <del>44</del> 05'38		evening set	1412 Apr 23 j 10:15	26° <del>8</del> 29'45	
	1405 Nov 26 j 07:54	0° <del>44</del>					
evening set	1406 Feb 01 j 18:44	6° <del>44</del> 23'03		conjunction	1412 May 11 j 08:03	28° <del>8</del> 49'03	-1°-43'-16
conjunction	1406 Feb 18 j 16:11	8° <del>44</del> 26'52	-1°-44'-44	minimum elong	1412 May 11 j 08:07	28° <del>8</del> 49'04	1°43'18
minimum elong	1406 Feb 18 j 16:08	8° <del>44</del> 26'51	1°44'44	max. Earth dist.	1412 May 11 j 11:33	28° <del>8</del> 50'11	10.03035 AU
max. Earth dist.	1406 Feb 18 j 10:20	8° <del>44</del> 25'04	10.63819 AU		1412 May 20 j 09:46	0° <del>44</del>	
morning rise	1406 Mar 07 j 17:45	10° <del>44</del> 31'59		morning rise	1412 May 29 j 08:50	1° <del>44</del> 09'19	
retrograde	1406 Jun 21 j 05:13	18° <del>44</del> 14'12		retrograde	1412 Sep 12 j 21:41	9° <del>44</del> 31'47	
opposition	1406 Aug 30 j 10:19	14° <del>44</del> 49'19	-2°-20'-12	opposition	1412 Nov 19 j 06:09	6° <del>44</del> 01'32	-1°-54'-17
min. Earth dist.	1406 Aug 30 j 14:36	14° <del>44</del> 48'29	8.57789 AU	min. Earth dist.	1412 Nov 19 j 02:45	6° <del>44</del> 02'15	8.01173 AU
direct	1406 Nov 06 j 11:51	11° <del>44</del> 28'42		direct	1413 Jan 24 j 15:54	2° <del>44</del> 33'28	
evening set	1407 Feb 14 j 12:04	18° <del>44</del> 53'57		evening set	1413 May 08 j 10:20	10° <del>44</del> 45'03	
conjunction	1407 Mar 03 j 12:26	21° <del>44</del> 00'12	-2°-1'-4	conjunction	1413 May 26 j 12:00	13° <del>44</del> 05'54	-1°-18'-26
minimum elong	1407 Mar 03 j 12:24	21° <del>44</del> 00'11	2°01'05	minimum elong	1413 May 26 j 12:03	13° <del>44</del> 05'55	1°18'28
max. Earth dist.	1407 Mar 03 j 08:03	20° <del>44</del> 58'50	10.51553 AU	max. Earth dist.	1413 May 26 j 17:35	13° <del>44</del> 07'44	9.99876 AU
morning rise	1407 Mar 20 j 17:09	23° <del>44</del> 07'52		morning rise	1413 Jun 13 j 15:25	15° <del>44</del> 27'22	
	1407 May 31 j 05:19	0° <del>44</del>		retrograde	1413 Sep 27 j 12:44	23° <del>44</del> 48'31	
retrograde	1407 Jul 04 j 22:28	1° <del>44</del> 00'07		opposition	1413 Dec 03 j 12:49	20° <del>44</del> 18'33	-1°-19'-59
	1407 Aug 08 j 22:54	30° <del>44</del>		min. Earth dist.	1413 Dec 03 j 07:55	20° <del>44</del> 19'34	7.99460 AU
opposition	1407 Sep 12 j 16:19	27° <del>44</del> 33'46	-2°-37'-26	direct	1414 Feb 08 j 02:28	16° <del>44</del> 49'35	
min. Earth dist.	1407 Sep 12 j 19:06	27° <del>44</del> 33'13	8.45471 AU	evening set	1414 May 23 j 14:15	25° <del>44</del> 04'16	
direct	1407 Nov 19 j 04:47	24° <del>44</del> 12'02		conjunction	1414 Jun 10 j 18:28	27° <del>44</del> 25'51	0°-48'-41
	1408 Feb 12 j 23:32	0° <del>44</del>		minimum elong	1414 Jun 10 j 18:31	27° <del>44</del> 25'51	0°48'43
evening set	1408 Feb 27 j 15:45	1° <del>44</del> 45'54		max. Earth dist.	1414 Jun 11 j 01:28	27° <del>44</del> 28'08	9.99711 AU
conjunction	1408 Mar 15 j 19:32	3° <del>44</del> 54'47	-2°-11'-49	morning rise	1414 Jun 28 j 23:06	29° <del>44</del> 47'35	
minimum elong	1408 Mar 15 j 19:31	3° <del>44</del> 54'46	2°11'49		1414 Jun 30 j 14:01	0° <del>44</del>	
max. Earth dist.	1408 Mar 15 j 16:16	3° <del>44</del> 53'45	10.39277 AU	retrograde	1414 Oct 12 j 01:11	8° <del>44</del> 00'43	
morning rise	1408 Apr 02 j 03:53	6° <del>44</del> 05'09		opposition	1414 Dec 17 j 18:44	4° <del>44</del> 35'26	0°-40'-43
retrograde	1408 Jul 17 j 21:50	14° <del>44</del> 06'57		min. Earth dist.	1414 Dec 17 j 13:08	4° <del>44</del> 36'36	8.00769 AU
opposition	1408 Sep 25 j 04:23	10° <del>44</del> 39'16	-2°-47'-7	direct	1415 Feb 22 j 15:00	1° <del>44</del> 05'51	
min. Earth dist.	1408 Sep 25 j 05:55	10° <del>44</del> 38'58	8.33469 AU	evening set	1415 Jun 07 j 18:58	9° <del>44</del> 02'127	
direct	1408 Dec 01 j 05:57	7° <del>44</del> 16'15		conjunction	1415 Jun 26 j 00:00	11° <del>44</del> 02'47	0°-16'-2
evening set	1409 Mar 12 j 05:52	14° <del>44</del> 59'06		minimum elong	1415 Jun 26 j 00:00	11° <del>44</del> 02'47	0°16'04
conjunction	1409 Mar 29 j 13:37	17° <del>44</del> 10'44	-2°-15'-54	max. Earth dist.	1415 Jun 26 j 07:29	11° <del>44</del> 04'513	10.02541 AU
minimum elong	1409 Mar 29 j 13:38	17° <del>44</del> 10'45	2°15'55	morning rise	1415 Jul 14 j 04:07	14° <del>44</del> 03'50	
max. Earth dist.	1409 Mar 29 j 11:20	17° <del>44</del> 10'01	10.27665 AU	retrograde	1415 Oct 26 j 09:09	22° <del>44</del> 01'45	
morning rise	1409 Apr 16 j 02:08	19° <del>44</del> 23'54		asc. node	1415 Dec 25 j 03:14	19° <del>44</del> 02'07	
retrograde	1409 Aug 01 j 03:32	27° <del>44</del> 34'07		opposition	1415 Dec 31 j 22:39	18° <del>44</del> 04'6'29	0°00'45
opposition	1409 Oct 08 j 22:27	24° <del>44</del> 05'18	-2°-48'-2	min. Earth dist.	1415 Dec 31 j 16:58	18° <del>44</del> 04'7'39	8.05015 AU
min. Earth dist.	1409 Oct 08 j 23:01	24° <del>44</del> 05'11	8.22450 AU	direct	1416 Mar 08 j 03:53	15° <del>44</del> 01'6'36	
direct	1409 Dec 14 j 15:38	20° <del>44</del> 40'56		evening set	1416 Jun 21 j 21:14	23° <del>44</del> 03'0'55	
evening set	1410 Mar 26 j 06:08	28° <del>44</del> 32'32		conjunction	1416 Jul 10 j 01:13	25° <del>44</del> 05'1'03	0°17'21
	1410 Apr 06 j 16:32	0° <del>44</del>		minimum elong	1416 Jul 10 j 01:12	25° <del>44</del> 05'1'02	0°17'20
conjunction	1410 Apr 12 j 18:27	0° <del>44</del> 46'59	-2°-12'-37	max. Earth dist.	1416 Jul 10 j 08:38	25° <del>44</del> 05'3'26	10.08176 AU
minimum elong	1410 Apr 12 j 18:29	0° <del>44</del> 46'59	2°12'38	morning rise	1416 Jul 28 j 03:09	28° <del>44</del> 010'29	
max. Earth dist.	1410 Apr 12 j 17:44	0° <del>44</del> 46'45	10.17371 AU		1416 Aug 11 j 21:36	0° <del>44</del>	
morning rise	1410 Apr 30 j 11:21	3° <del>44</del> 02'53		retrograde	1416 Nov 08 j 10:41	6° <del>44</del> 01'3'35	
				opposition	1417 Jan 13 j 23:01	2° <del>44</del> 04'6'35	0°41'37



min. Earth dist.	1417 Jan 13 j 17:29	2°♂47'43	8.11924 AU	retrograde	1423 Jan 23 j 23:56	23°♂48'33	
	1417 Feb 22 j 05:42	30°♂♂		opposition	1423 Apr 02 j 08:32	20°♂29'54	2°47'43
direct	1417 Mar 22 j 16:31	29°♂16'46		min. Earth dist.	1423 Apr 02 j 07:32	20°♂30'05	8.79359 AU
	1417 Apr 20 j 03:12	0°♂		direct	1423 Jun 12 j 01:55	17°♂06'03	
evening set	1417 Jul 06 j 18:28	7°♂27'46		evening set	1423 Sep 24 j 21:14	24°♂33'15	
conjunction	1417 Jul 24 j 19:47	9°♂45'51	0°49'12	conjunction	1423 Oct 11 j 19:41	26°♂34'27	2°15'29
minimum elong	1417 Jul 24 j 19:45	9°♂45'50	0°49'11	minimum elong	1423 Oct 11 j 19:42	26°♂34'27	2°15'29
max. Earth dist.	1417 Jul 25 j 02:38	9°♂48'02	10.16260 AU	max. Earth dist.	1423 Oct 11 j 19:47	26°♂34'29	10.84413 AU
morning rise	1417 Aug 11 j 18:06	12°♂02'55		morning rise	1423 Oct 28 j 14:13	28°♂34'29	
	1417 Sep 05 j 09:37	15°♂			1423 Nov 09 j 23:24	0°♂	
retrograde	1417 Nov 22 j 03:01	19°♂57'09		retrograde	1424 Feb 04 j 22:36	5°♂40'15	
opposition	1418 Jan 27 j 18:35	16°♂31'36	1°19'17	opposition	1424 Apr 13 j 19:18	2°♂22'26	2°42'50
min. Earth dist.	1418 Jan 27 j 13:18	16°♂32'41	8.21063 AU	min. Earth dist.	1424 Apr 13 j 19:10	2°♂22'27	8.89369 AU
	1418 Feb 16 j 05:37	15°♂♂			1424 May 18 j 20:33	30°♂♂	
direct	1418 Apr 06 j 02:09	13°♂02'13		direct	1424 Jun 23 j 20:04	28°♂59'50	
	1418 May 24 j 05:42	15°♂			1424 Jul 29 j 07:25	0°♂	
evening set	1418 Jul 21 j 08:15	21°♂08'09		evening set	1424 Oct 05 j 22:56	6°♂19'29	
conjunction	1418 Aug 08 j 05:40	23°♂23'34	1°17'42	conjunction	1424 Oct 22 j 18:31	8°♂18'46	2°08'56
minimum elong	1418 Aug 08 j 05:37	23°♂23'33	1°17'42	minimum elong	1424 Oct 22 j 18:33	8°♂18'47	2°08'55
max. Earth dist.	1418 Aug 08 j 11:45	23°♂25'30	10.26288 AU	max. Earth dist.	1424 Oct 22 j 17:31	8°♂18'28	10.93598 AU
morning rise	1418 Aug 25 j 23:17	25°♂37'45		morning rise	1424 Nov 08 j 10:33	10°♂17'03	
	1418 Oct 03 j 11:18	0°♂♂			1424 Dec 24 j 11:16	15°♂	
retrograde	1418 Dec 05 j 11:50	3°♂22'43		retrograde	1425 Feb 15 j 19:51	17°♂18'16	
opposition	1419 Feb 10 j 08:52	29°♂58'41	1°51'38		1425 Apr 12 j 17:19	15°♂♂	
min. Earth dist.	1419 Feb 10 j 03:31	29°♂59'46	8.31869 AU	opposition	1425 Apr 26 j 02:02	14°♂01'03	2°31'20
	1419 Feb 10 j 02:20	30°♂♂		min. Earth dist.	1425 Apr 26 j 02:55	14°♂00'53	8.97611 AU
direct	1419 Apr 20 j 06:23	26°♂30'04		direct	1425 Jul 06 j 07:48	10°♂39'38	
	1419 Jun 25 j 11:01	0°♂♂			1425 Sep 21 j 10:37	15°♂	
evening set	1419 Aug 04 j 12:38	4°♂29'27		evening set	1425 Oct 17 j 17:29	17°♂52'38	
conjunction	1419 Aug 22 j 05:21	6°♂41'52	1°41'24	conjunction	1425 Nov 03 j 10:54	19°♂50'31	1°57'12
minimum elong	1419 Aug 22 j 05:18	6°♂41'51	1°41'24	minimum elong	1425 Nov 03 j 10:56	19°♂50'32	1°57'11
max. Earth dist.	1419 Aug 22 j 11:07	6°♂43'40	10.37666 AU	max. Earth dist.	1425 Nov 03 j 08:44	19°♂49'52	11.00826 AU
morning rise	1419 Sep 08 j 17:37	8°♂52'53		morning rise	1425 Nov 20 j 01:12	21°♂47'33	
retrograde	1419 Dec 18 j 14:05	16°♂28'38		retrograde	1426 Feb 27 j 14:02	28°♂45'42	
opposition	1420 Feb 23 j 17:22	13°♂06'07	2°17'13	opposition	1426 May 08 j 05:48	25°♂28'51	2°13'58
min. Earth dist.	1420 Feb 23 j 12:15	13°♂07'08	8.43721 AU	min. Earth dist.	1426 May 08 j 08:36	25°♂28'20	9.03732 AU
direct	1420 May 03 j 03:24	9°♂38'32		direct	1426 Jul 18 j 12:00	22°♂08'29	
evening set	1420 Aug 17 j 06:38	17°♂30'20		evening set	1426 Oct 29 j 06:30	29°♂16'04	
					1426 Nov 04 j 13:50	0°♂♂	
conjunction	1420 Sep 03 j 18:23	19°♂39'39	1°59'19	conjunction	1426 Nov 14 j 22:17	1°♂12'58	1°40'57
minimum elong	1420 Sep 03 j 18:20	19°♂39'38	1°59'20	minimum elong	1426 Nov 14 j 22:20	1°♂12'59	1°40'57
max. Earth dist.	1420 Sep 03 j 23:46	19°♂41'19	10.49772 AU	max. Earth dist.	1426 Nov 14 j 17:55	1°♂11'41	11.05842 AU
morning rise	1420 Sep 21 j 01:16	21°♂47'30		morning rise	1426 Dec 01 j 11:51	3°♂09'16	
retrograde	1420 Dec 30 j 08:30	29°♂14'26		retrograde	1427 Mar 11 j 06:00	10°♂05'59	
opposition	1421 Mar 07 j 19:58	25°♂53'21	2°35'13	opposition	1427 May 20 j 07:46	6°♂49'12	1°51'35
min. Earth dist.	1421 Mar 07 j 15:51	25°♂54'10	8.55991 AU	min. Earth dist.	1427 May 20 j 12:17	6°♂48'22	9.07572 AU
direct	1421 May 16 j 17:34	22°♂26'56		direct	1427 Jul 30 j 13:23	3°♂29'40	
	1421 Aug 29 j 02:29	0°♂♂		evening set	1427 Nov 09 j 15:25	10°♂33'05	
evening set	1421 Aug 30 j 13:52	0°♂♂10'36					
conjunction	1421 Sep 16 j 20:43	2°♂16'55	2°11'00	conjunction	1427 Nov 26 j 06:16	12°♂29'28	1°20'54
minimum elong	1421 Sep 16 j 20:41	2°♂16'54	2°11'00	minimum elong	1427 Nov 26 j 06:18	12°♂29'28	1°20'54
max. Earth dist.	1421 Sep 17 j 00:56	2°♂18'12	10.61984 AU	max. Earth dist.	1427 Nov 26 j 00:14	12°♂27'41	11.08544 AU
morning rise	1421 Oct 03 j 22:41	4°♂21'47		morning rise	1427 Dec 12 j 19:50	14°♂25'28	
retrograde	1422 Jan 11 j 19:15	11°♂40'37		retrograde	1428 Mar 21 j 23:10	21°♂22'17	
opposition	1422 Mar 20 j 16:56	8°♂20'52	2°45'20	opposition	1428 May 31 j 08:40	18°♂05'15	1°25'04
min. Earth dist.	1422 Mar 20 j 14:33	8°♂21'19	8.68060 AU	min. Earth dist.	1428 May 31 j 13:56	18°♂04'17	9.09059 AU
direct	1422 May 30 j 01:28	4°♂55'42		direct	1428 Aug 10 j 12:12	14°♂46'20	
evening set	1422 Sep 12 j 10:32	12°♂31'03		evening set	1428 Nov 19 j 22:09	21°♂46'55	
conjunction	1422 Sep 29 j 12:48	14°♂34'37	2°16'19	conjunction	1428 Dec 06 j 12:45	23°♂43'11	0°57'47
minimum elong	1422 Sep 29 j 12:48	14°♂34'36	2°16'19	minimum elong	1428 Dec 06 j 12:47	23°♂43'12	0°57'48
max. Earth dist.	1422 Sep 29 j 14:52	14°♂35'14	10.73708 AU	max. Earth dist.	1428 Dec 06 j 06:29	23°♂41'21	11.08876 AU
morning rise	1422 Oct 16 j 10:38	16°♂36'51		morning rise	1428 Dec 23 j 02:41	25°♂39'19	



	1429 Feb 03 j 10:52	0°♄	evening set	1435 Jan 27 j 13:57	1°♄07'36	
retrograde	1429 Apr 02 j 17:37	2°♄37'46				
	1429 Jun 03 j 07:11	30°♄♂	conjunction	1435 Feb 13 j 10:23	3°♄10'40	-1°-35'-52
opposition	1429 Jun 12 j 09:22	29°♄20'10 0°55'20	minimum elong	1435 Feb 13 j 10:21	3°♄10'39	1°35'52
min. Earth dist.	1429 Jun 12 j 14:35	29°♄19'13 9.08174 AU	max. Earth dist.	1435 Feb 13 j 04:39	3°♄08'54	10.66955 AU
direct	1429 Aug 22 j 08:02	26°♄01'39	morning rise	1435 Mar 02 j 10:43	5°♄14'57	
	1429 Nov 03 j 07:39	0°♄	retrograde	1435 Jun 15 j 14:41	12°♄53'24	
evening set	1429 Dec 01 j 04:23	3°♄00'51	opposition	1435 Aug 24 j 22:46	9°♄28'30	-2°-10'-28
			min. Earth dist.	1435 Aug 25 j 02:39	9°♄27'45	8.61162 AU
conjunction	1429 Dec 17 j 19:05	4°♄57'23 0°32'26	direct	1435 Nov 01 j 05:19	6°♄07'42	
minimum elong	1429 Dec 17 j 19:07	4°♄57'23 0°32'26	evening set	1436 Feb 09 j 03:19	13°♄30'00	
max. Earth dist.	1429 Dec 17 j 12:42	4°♄55'30 11.06851 AU				
morning rise	1430 Jan 03 j 09:49	6°♄54'00	conjunction	1436 Feb 26 j 02:13	15°♄35'19	-1°-54'-23
retrograde	1430 Apr 14 j 16:51	13°♄55'40	minimum elong	1436 Feb 26 j 02:11	15°♄35'19	1°54'24
opposition	1430 Jun 24 j 11:24	10°♄37'16 0°23'21	max. Earth dist.	1436 Feb 25 j 20:54	15°♄33'40	10.55152 AU
min. Earth dist.	1430 Jun 24 j 17:05	10°♄36'13 9.04976 AU	morning rise	1436 Mar 14 j 05:38	17°♄42'02	
direct	1430 Sep 03 j 03:02	7°♄18'53	retrograde	1436 Jun 28 j 03:18	25°♄30'24	
evening set	1430 Dec 12 j 11:43	14°♄18'08	opposition	1436 Sep 06 j 02:19	22°♄04'07	-2°-30'-39
			min. Earth dist.	1436 Sep 06 j 05:44	22°♄03'27	8.49221 AU
conjunction	1430 Dec 29 j 02:45	16°♄15'19 0°05'44	direct	1436 Nov 12 j 19:56	18°♄42'20	
minimum elong	1430 Dec 29 j 02:44	16°♄15'19 0°05'43	evening set	1437 Feb 21 j 02:20	26°♄12'54	
behind sun begin	1430 Dec 28 j 20:03	16°♄13'21				
behind sun end	1430 Dec 29 j 09:26	16°♄17'16	conjunction	1437 Mar 10 j 04:25	28°♄20'43	-2°-7'-47
max. Earth dist.	1430 Dec 28 j 19:25	16°♄13'10 11.02564 AU	minimum elong	1437 Mar 10 j 04:23	28°♄20'42	2°07'48
morning rise	1431 Jan 14 j 18:50	18°♄12'50	max. Earth dist.	1437 Mar 10 j 00:47	28°♄19'35	10.43150 AU
desc. node	1431 Mar 17 j 14:25	24°♄02'29		1437 Mar 23 j 09:56	0°♄	
retrograde	1431 Apr 26 j 17:16	25°♄19'12	morning rise	1437 Mar 27 j 11:14	0°♄30'02	
opposition	1431 Jul 06 j 15:32	21°♄59'47 0°-9'-49	retrograde	1437 Jul 11 j 22:42	8°♄28'12	
min. Earth dist.	1431 Jul 06 j 21:55	21°♄58'36 8.99600 AU	opposition	1437 Sep 19 j 12:06	5°♄00'39	-2°-43'-52
direct	1431 Sep 14 j 20:46	18°♄41'18	min. Earth dist.	1437 Sep 19 j 14:10	5°♄00'14	8.37378 AU
evening set	1431 Dec 23 j 21:59	25°♄42'13	direct	1437 Nov 25 j 19:05	1°♄37'48	
			evening set	1438 Mar 06 j 11:53	9°♄17'09	
conjunction	1432 Jan 09 j 13:45	27°♄40'21 0°-21'-34				
minimum elong	1432 Jan 09 j 13:44	27°♄40'21 0°21'35	conjunction	1438 Mar 23 j 17:51	11°♄27'41	-2°-14'-57
max. Earth dist.	1432 Jan 09 j 05:56	27°♄38'02 10.96173 AU	minimum elong	1438 Mar 23 j 17:51	11°♄27'41	2°14'59
morning rise	1432 Jan 26 j 07:31	29°♄39'06	max. Earth dist.	1438 Mar 23 j 16:33	11°♄27'16	10.31561 AU
	1432 Jan 29 j 07:36	0°♄	morning rise	1438 Apr 10 j 04:28	13°♄39'44	
retrograde	1432 May 07 j 23:20	6°♄51'42	retrograde	1438 Jul 26 j 02:10	21°♄46'54	
opposition	1432 Jul 17 j 22:26	3°♄31'02 0°-43'-5	opposition	1438 Oct 03 j 03:54	18°♄18'15	-2°-48'-47
min. Earth dist.	1432 Jul 18 j 04:54	3°♄29'50 8.92234 AU	min. Earth dist.	1438 Oct 03 j 04:06	18°♄18'13	8.26259 AU
direct	1432 Sep 25 j 18:37	0°♄12'14	direct	1438 Dec 09 j 01:23	14°♄54'18	
evening set	1433 Jan 03 j 12:42	7°♄16'24	evening set	1439 Mar 20 j 08:02	22°♄42'28	
conjunction	1433 Jan 20 j 05:42	9°♄15'52 0°-48'-17	conjunction	1439 Apr 06 j 18:26	24°♄55'48	-2°-15'00
minimum elong	1433 Jan 20 j 05:40	9°♄15'51 0°48'18	minimum elong	1439 Apr 06 j 18:27	24°♄55'49	2°15'02
max. Earth dist.	1433 Jan 19 j 22:50	9°♄13'48 10.87895 AU	max. Earth dist.	1439 Apr 06 j 19:22	24°♄56'06	10.21022 AU
morning rise	1433 Feb 06 j 01:16	11°♄16'09	morning rise	1439 Apr 24 j 09:15	27°♄10'36	
	1433 Mar 12 j 11:31	15°♄		1439 May 17 j 19:50	0°♄	
retrograde	1433 May 20 j 13:46	18°♄36'19	retrograde	1439 Aug 09 j 12:48	5°♄25'13	
opposition	1433 Jul 30 j 09:25	15°♄14'18 -1°-15'-11	opposition	1439 Oct 17 j 01:14	1°♄55'47	-2°-44'-26
min. Earth dist.	1433 Jul 30 j 14:51	15°♄13'16 8.83131 AU	min. Earth dist.	1439 Oct 16 j 23:34	1°♄56'08	8.16486 AU
	1433 Aug 02 j 13:27	15°♄		1439 Nov 11 j 08:44	30°♄	
direct	1433 Oct 07 j 18:14	11°♄55'01	direct	1439 Dec 22 j 14:23	28°♄30'43	
	1433 Dec 08 j 16:07	15°♄		1440 Feb 01 j 01:00	0°♄	
evening set	1434 Jan 15 j 09:28	19°♄03'52	evening set	1440 Apr 02 j 14:23	6°♄27'15	
conjunction	1434 Feb 01 j 04:00	21°♄04'59 -1°-13'-26	conjunction	1440 Apr 20 j 05:25	8°♄43'16	-2°-7'-24
minimum elong	1434 Feb 01 j 03:58	21°♄04'58 1°13'27	minimum elong	1440 Apr 20 j 05:28	8°♄43'17	2°07'26
max. Earth dist.	1434 Jan 31 j 22:05	21°♄03'11 10.78025 AU	max. Earth dist.	1440 Apr 20 j 08:00	8°♄44'06	10.12152 AU
morning rise	1434 Feb 18 j 01:41	23°♄07'07	morning rise	1440 May 08 j 00:31	11°♄00'37	
	1434 May 06 j 07:41	0°♄		1440 Jun 10 j 18:28	15°♄	
retrograde	1434 Jun 02 j 10:06	0°♄36'02	retrograde	1440 Aug 23 j 03:53	19°♄20'30	
	1434 Jun 29 j 18:35	30°♄	opposition	1440 Oct 30 j 03:09	15°♄50'38	-2°-30'-26
opposition	1434 Aug 12 j 01:21	27°♄12'34 -1°-44'-48	min. Earth dist.	1440 Oct 30 j 00:12	15°♄51'14	8.08656 AU
min. Earth dist.	1434 Aug 12 j 05:43	27°♄11'44 8.72631 AU		1440 Nov 09 j 13:14	15°♄	
direct	1434 Oct 19 j 20:45	23°♄52'38	direct	1441 Jan 04 j 11:04	12°♄24'28	
	1435 Jan 18 j 00:51	0°♄		1441 Feb 27 j 12:50	15°♄	



evening set	1441 Apr 17 j 05:37	20°♄28'21		morning rise	1446 Aug 05 j 18:24	6°♄14'13	
				retrograde	1446 Nov 16 j 13:56	14°♄12'34	
conjunction	1441 May 05 j 01:19	22°♄46'44	-1°-52'-12	opposition	1447 Jan 22 j 03:10	10°♄46'51	1°03'19
minimum elong	1441 May 05 j 01:22	22°♄46'45	1°52'13	min. Earth dist.	1447 Jan 21 j 21:39	10°♄47'59	8.17536 AU
max. Earth dist.	1441 May 05 j 05:21	22°♄48'03	10.05518 AU	direct	1447 Mar 31 j 03:49	7°♄17'45	
morning rise	1441 May 23 j 00:27	25°♄06'14			1447 Jul 11 j 20:59	15°♄	
	1441 Jul 04 j 07:32	0°♄		evening set	1447 Jul 15 j 09:26	15°♄26'15	
retrograde	1441 Sep 06 j 20:52	3°♄28'42					
opposition	1441 Nov 13 j 08:23	29°♄58'46	-2°-7'-7	conjunction	1447 Aug 02 j 08:50	17°♄42'54	1°05'45
min. Earth dist.	1441 Nov 13 j 04:33	29°♄59'33	8.03282 AU	minimum elong	1447 Aug 02 j 08:47	17°♄42'53	1°05'44
	1441 Nov 13 j 02:24	30°♄♂		max. Earth dist.	1447 Aug 02 j 15:24	17°♄45'00	10.22200 AU
direct	1442 Jan 18 j 15:42	26°♄31'34		morning rise	1447 Aug 20 j 04:26	19°♄58'24	
	1442 Mar 22 j 23:26	0°♄		retrograde	1447 Nov 30 j 03:43	27°♄47'46	
evening set	1442 May 02 j 03:55	4°♄41'14		opposition	1448 Feb 04 j 20:25	24°♄23'27	1°38'15
				min. Earth dist.	1448 Feb 04 j 15:41	24°♄24'24	8.27264 AU
conjunction	1442 May 20 j 03:48	7°♄01'27	-1°-30'-2	direct	1448 Apr 13 j 09:56	20°♄54'49	
minimum elong	1442 May 20 j 03:52	7°♄01'28	1°30'03	evening set	1448 Jul 28 j 18:32	28°♄57'29	
max. Earth dist.	1442 May 20 j 09:04	7°♄03'10	10.01544 AU		1448 Aug 06 j 03:09	0°♄	
morning rise	1442 Jun 07 j 06:14	9°♄22'27					
retrograde	1442 Sep 21 j 12:37	17°♄44'35		conjunction	1448 Aug 15 j 13:27	1°♄11'19	1°31'43
opposition	1442 Nov 27 j 15:17	14°♄14'56	-1°-35'-45	minimum elong	1448 Aug 15 j 13:24	1°♄11'18	1°31'43
min. Earth dist.	1442 Nov 27 j 10:49	14°♄15'51	8.00693 AU	max. Earth dist.	1448 Aug 15 j 18:58	1°♄13'03	10.32636 AU
direct	1443 Feb 02 j 01:34	10°♄46'51		morning rise	1448 Sep 02 j 04:02	3°♄23'46	
evening set	1443 May 17 j 07:00	19°♄00'20		retrograde	1448 Dec 12 j 09:23	11°♄03'56	
				opposition	1449 Feb 17 j 07:58	7°♄40'58	2°06'58
conjunction	1443 Jun 04 j 10:02	21°♄21'35	-1°-2'-12	min. Earth dist.	1449 Feb 17 j 04:15	7°♄41'43	8.38321 AU
minimum elong	1443 Jun 04 j 10:05	21°♄21'36	1°02'13	direct	1449 Apr 27 j 10:42	4°♄13'02	
max. Earth dist.	1443 Jun 04 j 16:08	21°♄23'35	10.00442 AU	evening set	1449 Aug 11 j 17:45	12°♄08'39	
morning rise	1443 Jun 22 j 14:23	23°♄43'14					
	1443 Aug 19 j 03:20	0°♄		conjunction	1449 Aug 29 j 07:39	14°♄19'24	1°52'17
retrograde	1443 Oct 06 j 02:09	2°♄02'14		minimum elong	1449 Aug 29 j 07:36	14°♄19'23	1°52'17
	1443 Nov 23 j 21:10	30°♄♂		max. Earth dist.	1449 Aug 29 j 11:29	14°♄20'36	10.44092 AU
opposition	1443 Dec 11 j 21:59	28°♄33'11	0°-58'-21	morning rise	1449 Sep 15 j 17:00	16°♄28'44	
min. Earth dist.	1443 Dec 11 j 17:00	28°♄34'13	8.00999 AU	retrograde	1449 Dec 25 j 05:47	23°♄59'50	
direct	1444 Feb 16 j 14:24	25°♄04'24		opposition	1450 Mar 02 j 13:22	20°♄38'11	2°28'23
	1444 May 04 j 00:33	0°♄		min. Earth dist.	1450 Mar 02 j 10:19	20°♄38'47	8.50091 AU
evening set	1444 May 31 j 11:50	3°♄19'34		direct	1450 May 11 j 05:54	17°♄11'08	
				evening set	1450 Aug 25 j 06:07	24°♄58'51	
conjunction	1444 Jun 18 j 16:31	5°♄40'59	0°-30'-34				
minimum elong	1444 Jun 18 j 16:33	5°♄40'59	0°30'35	conjunction	1450 Sep 11 j 15:02	27°♄06'33	2°06'44
max. Earth dist.	1444 Jun 18 j 23:12	5°♄43'09	10.02196 AU	minimum elong	1450 Sep 11 j 14:59	27°♄06'33	2°06'45
morning rise	1444 Jul 06 j 21:07	8°♄02'19		max. Earth dist.	1450 Sep 11 j 17:44	27°♄07'23	10.55954 AU
retrograde	1444 Oct 19 j 12:01	16°♄15'57		morning rise	1450 Sep 28 j 19:19	29°♄12'50	
opposition	1444 Dec 25 j 03:03	12°♄47'46	0°-17'-30		1450 Oct 05 j 09:07	0°♄	
min. Earth dist.	1444 Dec 24 j 21:31	12°♄48'55	8.04075 AU	retrograde	1451 Jan 06 j 19:01	6°♄35'29	
direct	1445 Mar 02 j 04:05	9°♄18'34		opposition	1451 Mar 15 j 13:00	3°♄15'00	2°41'59
asc. node	1445 Jun 02 j 12:44	15°♄55'30		min. Earth dist.	1451 Mar 15 j 10:18	3°♄15'31	8.61961 AU
evening set	1445 Jun 15 j 15:28	17°♄33'24			1451 May 09 j 21:48	30°♄♂	
				direct	1451 May 24 j 18:26	29°♄49'01	
conjunction	1445 Jul 03 j 20:06	19°♄54'03	0°02'49		1451 Jun 08 j 12:14	0°♄	
minimum elong	1445 Jul 03 j 20:07	19°♄54'03	0°02'49	evening set	1451 Sep 07 j 07:20	7°♄28'23	
behind sun begin	1445 Jul 03 j 12:46	19°♄51'41					
behind sun end	1445 Jul 04 j 03:27	19°♄56'24		conjunction	1451 Sep 24 j 11:40	9°♄33'14	2°14'50
max. Earth dist.	1445 Jul 04 j 03:07	19°♄56'18	10.06587 AU	minimum elong	1451 Sep 24 j 11:39	9°♄33'14	2°14'50
morning rise	1445 Jul 21 j 23:14	22°♄14'12		max. Earth dist.	1451 Sep 24 j 13:52	9°♄33'54	10.67630 AU
	1445 Oct 14 j 10:54	0°♄		morning rise	1451 Oct 11 j 11:20	11°♄36'42	
retrograde	1445 Nov 02 j 16:47	0°♄20'47		retrograde	1452 Jan 19 j 03:26	18°♄51'48	
	1445 Nov 21 j 23:58	30°♄♂		opposition	1452 Mar 27 j 06:57	15°♄32'18	2°47'43
opposition	1446 Jan 08 j 05:09	26°♄53'46	0°23'57	min. Earth dist.	1452 Mar 27 j 04:58	15°♄32'41	8.73358 AU
min. Earth dist.	1446 Jan 07 j 23:25	26°♄54'56	8.09675 AU	direct	1452 Jun 05 j 21:31	12°♄07'30	
direct	1446 Mar 16 j 17:08	23°♄24'28		evening set	1452 Sep 18 j 22:16	19°♄38'33	
	1446 Jun 17 j 13:14	0°♄					
evening set	1446 Jun 30 j 15:36	1°♄37'04		conjunction	1452 Oct 05 j 22:35	21°♄40'53	2°16'38
				minimum elong	1452 Oct 05 j 22:35	21°♄40'53	2°16'38
conjunction	1446 Jul 18 j 18:25	3°♄56'05	0°35'33	max. Earth dist.	1452 Oct 06 j 00:07	21°♄41'21	10.78585 AU
minimum elong	1446 Jul 18 j 18:23	3°♄56'04	0°35'32	morning rise	1452 Oct 22 j 18:27	23°♄41'57	
max. Earth dist.	1446 Jul 19 j 01:22	3°♄58'19	10.13360 AU		1452 Dec 29 j 20:50	0°♄	



retrograde	1453 Jan 30 j 05:03	0° $\mathbb{M}$ 50'30		retrograde	1459 Apr 09 j 18:03	9° $\mathbb{Z}$ 12'05	
	1453 Mar 03 j 02:05	30° $\mathbb{R}$ $\mathbb{A}$		opposition	1459 Jun 19 j 13:04	5° $\mathbb{Z}$ 54'09	0°37'39
opposition	1453 Apr 08 j 19:42	27° $\mathbb{A}$ 31'52	2°45'56	min. Earth dist.	1459 Jun 19 j 17:53	5° $\mathbb{Z}$ 53'15	9.07861 AU
min. Earth dist.	1453 Apr 08 j 19:21	27° $\mathbb{A}$ 31'56	8.83788 AU	direct	1459 Aug 29 j 08:26	2° $\mathbb{Z}$ 35'51	
direct	1453 Jun 18 j 17:11	24° $\mathbb{A}$ 08'14		evening set	1459 Dec 07 j 21:22	9° $\mathbb{Z}$ 34'11	
	1453 Sep 17 j 20:07	0° $\mathbb{M}$					
evening set	1453 Oct 01 j 03:56	1° $\mathbb{M}$ 31'26		conjunction	1459 Dec 24 j 12:10	11° $\mathbb{Z}$ 30'50	0°17'37
				minimum elong	1459 Dec 24 j 12:11	11° $\mathbb{Z}$ 30'51	0°17'37
conjunction	1453 Oct 18 j 00:50	3° $\mathbb{M}$ 31'39	2°12'31	max. Earth dist.	1459 Dec 24 j 06:43	11° $\mathbb{Z}$ 29'15	11.06261 AU
minimum elong	1453 Oct 18 j 00:51	3° $\mathbb{M}$ 31'40	2°12'30	morning rise	1460 Jan 10 j 03:37	13° $\mathbb{Z}$ 27'43	
max. Earth dist.	1453 Oct 18 j 00:28	3° $\mathbb{M}$ 31'33	10.88360 AU	retrograde	1460 Apr 20 j 17:19	20° $\mathbb{Z}$ 30'57	
morning rise	1453 Nov 03 j 17:53	5° $\mathbb{M}$ 30'47		opposition	1460 Jun 30 j 15:22	17° $\mathbb{Z}$ 12'17	0°04'56
retrograde	1454 Feb 11 j 01:56	12° $\mathbb{M}$ 34'04		min. Earth dist.	1460 Jun 30 j 19:51	17° $\mathbb{Z}$ 11'27	9.04098 AU
opposition	1454 Apr 21 j 04:10	9° $\mathbb{M}$ 16'06	2°37'13	desc. node	1460 Aug 25 j 15:33	14° $\mathbb{Z}$ 04'24	
min. Earth dist.	1454 Apr 21 j 05:19	9° $\mathbb{M}$ 15'54	8.92825 AU	direct	1460 Sep 09 j 02:12	13° $\mathbb{Z}$ 54'14	
direct	1454 Jul 01 j 07:56	5° $\mathbb{M}$ 53'37		evening set	1460 Dec 18 j 05:37	20° $\mathbb{Z}$ 53'23	
evening set	1454 Oct 13 j 01:26	13° $\mathbb{M}$ 09'42					
	1454 Oct 28 j 15:52	15° $\mathbb{M}$		conjunction	1461 Jan 03 j 21:02	22° $\mathbb{Z}$ 50'48	0°-9'-30
conjunction	1454 Oct 29 j 19:39	15° $\mathbb{M}$ 08'15	2°02'57	minimum elong	1461 Jan 03 j 21:02	22° $\mathbb{Z}$ 50'48	0°09'32
minimum elong	1454 Oct 29 j 19:41	15° $\mathbb{M}$ 08'15	2°02'57	behind sun begin	1461 Jan 03 j 15:12	22° $\mathbb{Z}$ 49'05	
max. Earth dist.	1454 Oct 29 j 17:32	15° $\mathbb{M}$ 07'37	10.96578 AU	behind sun end	1461 Jan 04 j 02:52	22° $\mathbb{Z}$ 52'30	
morning rise	1454 Nov 15 j 10:49	17° $\mathbb{M}$ 05'53		max. Earth dist.	1461 Jan 03 j 15:48	22° $\mathbb{Z}$ 49'16	11.01416 AU
retrograde	1455 Feb 22 j 19:39	24° $\mathbb{M}$ 05'20		morning rise	1461 Jan 20 j 13:45	24° $\mathbb{Z}$ 48'40	
opposition	1455 May 03 j 09:05	20° $\mathbb{M}$ 47'49	2°22'17		1461 Mar 13 j 20:35	0° $\approx$	
min. Earth dist.	1455 May 03 j 10:51	20° $\mathbb{M}$ 47'30	9.00128 AU	retrograde	1461 May 02 j 22:01	1° $\approx$ 57'17	
direct	1455 Jul 13 j 16:05	17° $\mathbb{M}$ 26'29			1461 Jun 23 j 17:57	30° $\mathbb{R}$ $\mathbb{Z}$	
evening set	1455 Oct 24 j 16:23	24° $\mathbb{M}$ 36'24		opposition	1461 Jul 12 j 20:12	28° $\mathbb{Z}$ 37'42	0°-28'-19
				min. Earth dist.	1461 Jul 13 j 00:35	28° $\mathbb{Z}$ 36'53	8.98192 AU
conjunction	1455 Nov 10 j 08:52	26° $\mathbb{M}$ 33'44	1°48'35	direct	1461 Sep 20 j 21:24	25° $\mathbb{Z}$ 19'39	
minimum elong	1455 Nov 10 j 08:55	26° $\mathbb{M}$ 33'45	1°48'35		1461 Dec 08 j 16:29	0° $\approx$	
max. Earth dist.	1455 Nov 10 j 06:11	26° $\mathbb{M}$ 32'56	11.02933 AU	evening set	1461 Dec 29 j 17:40	2° $\approx$ 21'08	
morning rise	1455 Nov 26 j 22:50	28° $\mathbb{M}$ 30'21					
	1455 Dec 10 j 04:36	0° $\mathbb{Z}$		conjunction	1462 Jan 15 j 09:53	4° $\approx$ 19'38	0°-36'-29
retrograde	1456 Mar 05 j 12:31	5° $\mathbb{Z}$ 27'27		minimum elong	1462 Jan 15 j 09:52	4° $\approx$ 19'38	0°36'30
opposition	1456 May 14 j 11:15	2° $\mathbb{Z}$ 10'10	2°01'59	max. Earth dist.	1462 Jan 15 j 03:51	4° $\approx$ 17'50	10.94514 AU
min. Earth dist.	1456 May 14 j 13:16	2° $\mathbb{Z}$ 09'48	9.05430 AU	morning rise	1462 Feb 01 j 04:23	6° $\approx$ 18'51	
	1456 Jun 15 j 10:43	30° $\mathbb{R}$ $\mathbb{M}$		retrograde	1462 May 15 j 08:09	13° $\approx$ 34'14	
direct	1456 Jul 24 j 19:20	28° $\mathbb{M}$ 49'51		opposition	1462 Jul 25 j 04:46	10° $\approx$ 13'32	-1°00'-59
	1456 Sep 01 j 07:16	0° $\mathbb{Z}$		min. Earth dist.	1462 Jul 25 j 09:44	10° $\approx$ 12'36	8.90351 AU
evening set	1456 Nov 04 j 02:29	5° $\mathbb{Z}$ 54'48		direct	1462 Oct 02 j 17:43	6° $\approx$ 55'13	
				evening set	1463 Jan 10 j 10:53	14° $\approx$ 00'32	
conjunction	1456 Nov 20 j 17:54	7° $\mathbb{Z}$ 51'22	1°30'06		1463 Jan 18 j 19:05	15° $\approx$	
minimum elong	1456 Nov 20 j 17:57	7° $\mathbb{Z}$ 51'23	1°30'07	conjunction	1463 Jan 27 j 04:21	16° $\approx$ 00'28	-1°-2'-23
max. Earth dist.	1456 Nov 20 j 14:51	7° $\mathbb{Z}$ 50'28	11.07187 AU	minimum elong	1463 Jan 27 j 04:19	16° $\approx$ 00'27	1°02'24
morning rise	1456 Dec 07 j 07:20	9° $\mathbb{Z}$ 47'26		max. Earth dist.	1463 Jan 26 j 21:57	15° $\approx$ 58'32	10.85788 AU
retrograde	1457 Mar 17 j 06:07	16° $\mathbb{Z}$ 43'41		morning rise	1463 Feb 13 j 00:59	18° $\approx$ 01'21	
opposition	1457 May 26 j 11:58	13° $\mathbb{Z}$ 26'26	1°37'09	retrograde	1463 May 27 j 22:45	25° $\approx$ 24'45	
min. Earth dist.	1457 May 26 j 15:00	13° $\mathbb{Z}$ 25'53	9.08538 AU	opposition	1463 Aug 06 j 17:38	22° $\approx$ 02'44	-1°-31'-45
direct	1457 Aug 05 j 17:24	10° $\mathbb{Z}$ 07'00		min. Earth dist.	1463 Aug 06 j 22:47	22° $\approx$ 01'46	8.80824 AU
evening set	1457 Nov 15 j 09:36	17° $\mathbb{Z}$ 08'17		direct	1463 Oct 14 j 18:39	18° $\approx$ 43'52	
				evening set	1464 Jan 22 j 10:57	25° $\approx$ 54'31	
conjunction	1457 Dec 02 j 00:16	19° $\mathbb{Z}$ 04'30	1°08'15				
minimum elong	1457 Dec 02 j 00:18	19° $\mathbb{Z}$ 04'30	1°08'16	conjunction	1464 Feb 08 j 06:14	27° $\approx$ 56'13	-1°-26'-6
max. Earth dist.	1457 Dec 01 j 19:51	19° $\mathbb{Z}$ 03'12	11.09186 AU	minimum elong	1464 Feb 08 j 06:11	27° $\approx$ 56'12	1°26'06
morning rise	1457 Dec 18 j 13:55	21° $\mathbb{Z}$ 00'26		max. Earth dist.	1464 Feb 08 j 00:24	27° $\approx$ 54'27	10.75497 AU
retrograde	1458 Mar 28 j 22:16	27° $\mathbb{Z}$ 57'26		morning rise	1464 Feb 25 j 05:09	29° $\approx$ 59'03	
opposition	1458 Jun 07 j 12:16	24° $\mathbb{Z}$ 39'58	1°08'43		1464 Feb 25 j 08:20	0° $\mathbb{H}$	
min. Earth dist.	1458 Jun 07 j 16:40	24° $\mathbb{Z}$ 39'10	9.09353 AU	retrograde	1464 Jun 08 j 22:50	7° $\mathbb{H}$ 31'29	
direct	1458 Aug 17 j 12:54	21° $\mathbb{Z}$ 21'12		opposition	1464 Aug 18 j 11:20	4° $\mathbb{H}$ 08'03	-1°-59'-14
evening set	1458 Nov 26 j 15:23	28° $\mathbb{Z}$ 20'18		min. Earth dist.	1464 Aug 18 j 15:57	4° $\mathbb{H}$ 07'10	8.69902 AU
	1458 Dec 10 j 21:34	0° $\mathbb{Z}$		direct	1464 Oct 26 j 01:10	0° $\mathbb{H}$ 48'26	
conjunction	1458 Dec 13 j 05:48	0° $\mathbb{Z}$ 16'31	0°43'49	evening set	1465 Feb 02 j 19:07	8° $\mathbb{H}$ 05'45	
minimum elong	1458 Dec 13 j 05:50	0° $\mathbb{Z}$ 16'32	0°43'49	conjunction	1465 Feb 19 j 16:42	10° $\mathbb{H}$ 09'34	-1°-46'-27
max. Earth dist.	1458 Dec 13 j 00:06	0° $\mathbb{Z}$ 14'51	11.08875 AU	minimum elong	1465 Feb 19 j 16:39	10° $\mathbb{H}$ 09'33	1°46'27
morning rise	1458 Dec 29 j 20:13	2° $\mathbb{Z}$ 12'45		max. Earth dist.	1465 Feb 19 j 11:46	10° $\mathbb{H}$ 08'02	10.63988 AU



morning rise	1465 Mar 08 j 18:15	12° $\text{K}$ 14'40		retrograde	1471 Sep 14 j 21:12	11° $\text{II}$ 13'10	
retrograde	1465 Jun 22 j 07:20	19° $\text{K}$ 56'52		opposition	1471 Nov 21 j 05:44	7° $\text{II}$ 42'59	-1°-51'-40
opposition	1465 Aug 31 j 10:59	16° $\text{K}$ 31'59	-2°-21'-59	min. Earth dist.	1471 Nov 21 j 02:08	7° $\text{II}$ 43'43	8.01447 AU
min. Earth dist.	1465 Aug 31 j 14:28	16° $\text{K}$ 31'18	8.58000 AU	direct	1472 Jan 26 j 15:15	4° $\text{II}$ 14'56	
direct	1465 Nov 07 j 11:13	13° $\text{K}$ 11'26		evening set	1472 May 09 j 10:57	12° $\text{II}$ 26'24	
evening set	1466 Feb 15 j 12:31	20° $\text{K}$ 36'35					
conjunction	1466 Mar 04 j 12:53	22° $\text{K}$ 42'48	-2°-2'-16	conjunction	1472 May 27 j 12:44	14° $\text{II}$ 47'15	-1°-16'-9
minimum elong	1466 Mar 04 j 12:51	22° $\text{K}$ 42'47	2°02'16	minimum elong	1472 May 27 j 12:47	14° $\text{II}$ 47'17	1°16'10
max. Earth dist.	1466 Mar 04 j 08:20	22° $\text{K}$ 41'23	10.51783 AU	max. Earth dist.	1472 May 27 j 18:06	14° $\text{II}$ 49'01	10.00149 AU
morning rise	1466 Mar 21 j 17:41	24° $\text{K}$ 50'27		morning rise	1472 Jun 14 j 16:10	17° $\text{II}$ 08'40	
retrograde	1466 May 08 j 15:12	0° $\text{Y}$		retrograde	1472 Sep 28 j 13:08	25° $\text{II}$ 29'26	
retrograde	1466 Jul 05 j 23:11	2° $\text{Y}$ 42'38		opposition	1472 Dec 04 j 12:14	21° $\text{II}$ 59'33	-1°-16'-56
	1466 Sep 04 j 08:14	30° $\text{R}$ $\text{K}$		min. Earth dist.	1472 Dec 04 j 07:41	22° $\text{II}$ 00'30	7.99728 AU
opposition	1466 Sep 13 j 16:52	29° $\text{K}$ 16'19	-2°-38'-31	direct	1473 Feb 09 j 01:07	18° $\text{II}$ 30'35	
min. Earth dist.	1466 Sep 13 j 19:35	29° $\text{K}$ 15'47	8.45722 AU	evening set	1473 May 24 j 14:46	26° $\text{II}$ 45'09	
direct	1466 Nov 20 j 04:44	25° $\text{K}$ 54'38		conjunction	1473 Jun 11 j 18:56	29° $\text{II}$ 06'42	0°-46'-7
	1467 Jan 29 j 14:31	0° $\text{Y}$		minimum elong	1473 Jun 11 j 18:59	29° $\text{II}$ 06'43	0°46'09
evening set	1467 Feb 28 j 16:12	3° $\text{Y}$ 28'25		max. Earth dist.	1473 Jun 12 j 01:08	29° $\text{II}$ 08'44	9.99979 AU
conjunction	1467 Mar 17 j 19:59	5° $\text{Y}$ 37'17	-2°-12'-24		1473 Jun 18 j 14:11	0° $\text{S}$	
minimum elong	1467 Mar 17 j 19:59	5° $\text{Y}$ 37'17	2°12'25	morning rise	1473 Jun 29 j 23:35	1° $\text{S}$ 28'24	
max. Earth dist.	1467 Mar 17 j 16:00	5° $\text{Y}$ 36'02	10.39542 AU	retrograde	1473 Oct 13 j 01:40	9° $\text{S}$ 45'08	
morning rise	1467 Apr 04 j 04:36	7° $\text{Y}$ 47'39		opposition	1473 Dec 18 j 18:05	6° $\text{S}$ 15'56	0°-37'-25
retrograde	1467 Jul 19 j 22:08	15° $\text{Y}$ 49'19		min. Earth dist.	1473 Dec 18 j 13:18	6° $\text{S}$ 16'55	8.01033 AU
opposition	1467 Sep 27 j 04:46	12° $\text{Y}$ 21'42	-2°-47'-26	direct	1474 Feb 23 j 14:13	2° $\text{S}$ 46'19	
min. Earth dist.	1467 Sep 27 j 06:54	12° $\text{Y}$ 21'17	8.33741 AU	evening set	1474 Jun 08 j 19:18	11° $\text{S}$ 01'50	
direct	1467 Dec 03 j 06:18	8° $\text{Y}$ 58'43		conjunction	1474 Jun 27 j 00:12	13° $\text{S}$ 23'06	0°-13'-21
evening set	1468 Mar 13 j 06:21	16° $\text{Y}$ 41'29		minimum elong	1474 Jun 27 j 00:13	13° $\text{S}$ 23'06	0°13'23
conjunction	1468 Mar 30 j 14:16	18° $\text{Y}$ 53'09	-2°-15'-51	behind sun begin	1474 Jun 26 j 20:11	13° $\text{S}$ 21'48	
minimum elong	1468 Mar 30 j 14:16	18° $\text{Y}$ 53'09	2°15'52	behind sun end	1474 Jun 27 j 04:14	13° $\text{S}$ 24'24	
max. Earth dist.	1468 Mar 30 j 11:30	18° $\text{Y}$ 52'16	10.27944 AU	max. Earth dist.	1474 Jun 27 j 06:30	13° $\text{S}$ 25'08	10.02799 AU
morning rise	1468 Apr 17 j 03:01	21° $\text{Y}$ 06'19		morning rise	1474 Jul 15 j 04:21	15° $\text{S}$ 44'06	
retrograde	1468 Aug 02 j 04:05	29° $\text{Y}$ 16'19		retrograde	1474 Oct 27 j 08:41	23° $\text{S}$ 54'38	
opposition	1468 Oct 09 j 22:37	25° $\text{Y}$ 47'36	-2°-47'-33	asc. node	1474 Nov 25 j 13:38	23° $\text{S}$ 07'42	
min. Earth dist.	1468 Oct 09 j 23:49	25° $\text{Y}$ 47'21	8.22727 AU	opposition	1475 Jan 01 j 21:49	20° $\text{S}$ 26'26	0°04'06
direct	1468 Dec 15 j 15:40	22° $\text{Y}$ 23'15		min. Earth dist.	1475 Jan 01 j 16:55	20° $\text{S}$ 27'26	8.05262 AU
	1469 Mar 25 j 07:33	0° $\text{S}$		direct	1475 Mar 10 j 04:33	16° $\text{S}$ 56'30	
evening set	1469 Mar 27 j 06:36	0° $\text{S}$ 14'47		evening set	1475 Jun 23 j 21:29	25° $\text{S}$ 10'46	
conjunction	1469 Apr 13 j 19:10	2° $\text{S}$ 29'14	-2°-11'-55	conjunction	1475 Jul 12 j 01:17	27° $\text{S}$ 30'48	0°19'59
minimum elong	1469 Apr 13 j 19:12	2° $\text{S}$ 29'14	2°11'56	minimum elong	1475 Jul 12 j 01:16	27° $\text{S}$ 30'48	0°19'59
max. Earth dist.	1469 Apr 13 j 18:40	2° $\text{S}$ 29'04	10.17650 AU	max. Earth dist.	1475 Jul 12 j 07:37	27° $\text{S}$ 32'50	10.08405 AU
morning rise	1469 May 01 j 12:12	4° $\text{S}$ 45'07		morning rise	1475 Jul 30 j 03:08	29° $\text{S}$ 50'10	
retrograde	1469 Aug 16 j 14:56	13° $\text{S}$ 01'41			1475 Jul 31 j 10:15	0° $\text{Q}$	
opposition	1469 Oct 23 j 21:32	9° $\text{S}$ 32'06	-2°-38'-11	retrograde	1475 Nov 10 j 08:13	7° $\text{Q}$ 52'56	
min. Earth dist.	1469 Oct 23 j 21:10	9° $\text{S}$ 32'11	8.13318 AU	opposition	1476 Jan 15 j 21:59	4° $\text{Q}$ 25'58	0°44'49
direct	1469 Dec 29 j 09:15	6° $\text{S}$ 06'26		min. Earth dist.	1476 Jan 15 j 16:45	4° $\text{Q}$ 27'03	8.12136 AU
evening set	1470 Apr 10 j 16:34	14° $\text{S}$ 06'00		direct	1476 Mar 23 j 17:25	0° $\text{Q}$ 56'08	
	1470 Apr 17 j 17:24	15° $\text{S}$		evening set	1476 Jul 07 j 18:27	9° $\text{Q}$ 07'04	
conjunction	1470 Apr 28 j 10:03	16° $\text{S}$ 23'05	-2°00'-19	conjunction	1476 Jul 25 j 19:36	11° $\text{Q}$ 25'03	0°51'39
minimum elong	1470 Apr 28 j 10:06	16° $\text{S}$ 23'06	2°00'21	minimum elong	1476 Jul 25 j 19:34	11° $\text{Q}$ 25'02	0°51'38
max. Earth dist.	1470 Apr 28 j 11:56	16° $\text{S}$ 23'42	10.09270 AU	max. Earth dist.	1476 Jul 26 j 01:58	11° $\text{Q}$ 27'06	10.16444 AU
morning rise	1470 May 16 j 07:15	18° $\text{S}$ 41'24		morning rise	1476 Aug 12 j 17:42	13° $\text{Q}$ 42'01	
retrograde	1470 Aug 31 j 05:18	27° $\text{S}$ 02'07			1476 Aug 23 j 06:11	15° $\text{Q}$	
opposition	1470 Nov 07 j 00:17	23° $\text{S}$ 32'02	-2°-19'-17	retrograde	1476 Nov 23 j 01:16	21° $\text{Q}$ 36'03	
min. Earth dist.	1470 Nov 06 j 22:08	23° $\text{S}$ 32'29	8.06076 AU	opposition	1477 Jan 28 j 17:29	18° $\text{Q}$ 10'30	1°22'08
direct	1471 Jan 12 j 09:49	20° $\text{S}$ 05'07		min. Earth dist.	1477 Jan 28 j 11:52	18° $\text{Q}$ 11'38	8.21224 AU
evening set	1471 Apr 25 j 10:45	28° $\text{S}$ 11'28		direct	1477 Mar 19 j 04:18	15° $\text{R}$ $\text{Q}$	
	1471 May 09 j 10:26	0° $\text{II}$		evening set	1477 Apr 07 j 01:39	14° $\text{Q}$ 41'05	
conjunction	1471 May 13 j 08:49	0° $\text{II}$ 30'47	-1°-41'-25		1477 Apr 25 j 21:46	15° $\text{Q}$	
minimum elong	1471 May 13 j 08:53	0° $\text{II}$ 30'48	1°41'26	conjunction	1477 Jul 22 j 07:51	22° $\text{Q}$ 46'55	
max. Earth dist.	1471 May 13 j 12:40	0° $\text{II}$ 32'02	10.03314 AU	minimum elong	1477 Aug 09 j 05:08	25° $\text{Q}$ 02'16	1°19'49
morning rise	1471 May 31 j 09:40	2° $\text{II}$ 51'01		max. Earth dist.	1477 Aug 09 j 05:05	25° $\text{Q}$ 02'15	1°19'49
					1477 Aug 09 j 11:31	25° $\text{Q}$ 04'18	10.26417 AU



morning rise	1477 Aug 26 j 22:25	27°♏16'21		morning rise	1483 Nov 10 j 09:02	11°♍55'38	
	1477 Sep 18 j 20:36	0°♐			1483 Dec 08 j 09:56	15°♍	
retrograde	1477 Dec 06 j 11:19	5°♐01'11		retrograde	1484 Feb 17 j 19:11	18°♍57'00	
opposition	1478 Feb 11 j 07:42	1°♐37'08	1°54'00	opposition	1484 Apr 27 j 01:30	15°♍39'47	2°29'50
min. Earth dist.	1478 Feb 11 j 02:04	1°♐38'15	8.31966 AU	min. Earth dist.	1484 Apr 27 j 02:23	15°♍39'37	8.97521 AU
	1478 Mar 04 j 07:36	30°♏			1484 May 06 j 00:10	15°♏♍	
direct	1478 Apr 21 j 04:53	28°♏08'29		direct	1484 Jul 07 j 05:13	12°♍18'26	
	1478 Jun 07 j 10:28	0°♐			1484 Sep 04 j 18:31	15°♍	
evening set	1478 Aug 05 j 12:07	6°♐07'49		evening set	1484 Oct 18 j 16:07	19°♍31'24	
conjunction	1478 Aug 23 j 04:40	8°♐20'10	1°43'05	conjunction	1484 Nov 04 j 09:26	21°♍29'17	1°55'45
minimum elong	1478 Aug 23 j 04:37	8°♐20'09	1°43'05	minimum elong	1484 Nov 04 j 09:29	21°♍29'17	1°55'44
max. Earth dist.	1478 Aug 23 j 10:54	8°♐22'08	10.37727 AU	max. Earth dist.	1484 Nov 04 j 07:14	21°♍28'38	11.00781 AU
morning rise	1478 Sep 09 j 16:33	10°♐31'06		morning rise	1484 Nov 20 j 23:49	23°♍26'21	
retrograde	1478 Dec 19 j 13:04	18°♐06'46			1485 Feb 06 j 08:55	0°♏	
opposition	1479 Feb 24 j 16:12	14°♐44'15	2°19'01	retrograde	1485 Feb 28 j 12:06	0°♏24'35	
min. Earth dist.	1479 Feb 24 j 11:29	14°♐45'11	8.43749 AU		1485 Mar 22 j 22:43	30°♏♍	
direct	1479 May 05 j 02:13	11°♐16'38		opposition	1485 May 09 j 05:18	27°♍07'45	2°11'56
evening set	1479 Aug 19 j 05:58	19°♐08'27		min. Earth dist.	1485 May 09 j 08:22	27°♍07'11	9.03727 AU
				direct	1485 Jul 19 j 11:32	23°♍47'24	
conjunction	1479 Sep 05 j 17:27	21°♐17'42	2°00'31		1485 Oct 22 j 03:52	0°♏	
minimum elong	1479 Sep 05 j 17:24	21°♐17'41	2°00'31	evening set	1485 Oct 30 j 05:04	0°♏54'55	
max. Earth dist.	1479 Sep 05 j 22:38	21°♐19'18	10.49763 AU				
morning rise	1479 Sep 23 j 00:02	23°♐25'29		conjunction	1485 Nov 15 j 20:48	2°♏51'49	1°39'05
	1479 Nov 30 j 22:20	0°♑		minimum elong	1485 Nov 15 j 20:51	2°♏51'49	1°39'05
retrograde	1480 Jan 01 j 07:10	0°♑52'25		max. Earth dist.	1485 Nov 15 j 16:15	2°♏50'28	11.05874 AU
	1480 Feb 02 j 02:30	30°♏♐		morning rise	1485 Dec 02 j 10:31	4°♏48'08	
opposition	1480 Mar 08 j 18:58	27°♐31'21	2°36'21	retrograde	1486 Mar 12 j 05:21	11°♏44'54	
min. Earth dist.	1480 Mar 08 j 15:34	27°♐32'01	8.55956 AU	opposition	1486 May 21 j 07:14	8°♏28'07	1°49'06
direct	1480 May 17 j 16:49	24°♐04'55		min. Earth dist.	1486 May 21 j 11:17	8°♏27'22	9.07624 AU
	1480 Aug 16 j 01:21	0°♑		direct	1486 Jul 31 j 13:27	5°♏08'39	
evening set	1480 Aug 31 j 12:55	1°♑48'36		evening set	1486 Nov 10 j 13:53	12°♏11'56	
conjunction	1480 Sep 17 j 19:26	3°♑54'52	2°11'38	conjunction	1486 Nov 27 j 04:50	14°♏08'20	1°18'42
minimum elong	1480 Sep 17 j 19:24	3°♑54'52	2°11'39	minimum elong	1486 Nov 27 j 04:52	14°♏08'20	1°18'42
max. Earth dist.	1480 Sep 17 j 22:50	3°♑55'55	10.61915 AU	max. Earth dist.	1486 Nov 26 j 23:40	14°♏06'48	11.08615 AU
morning rise	1480 Oct 04 j 21:17	5°♑59'43		morning rise	1486 Dec 13 j 18:24	16°♏04'21	
retrograde	1481 Jan 12 j 17:52	13°♑18'37		retrograde	1487 Mar 23 j 22:11	23°♏01'15	
opposition	1481 Mar 21 j 15:58	9°♑58'52	2°45'47	opposition	1487 Jun 02 j 08:12	19°♏44'13	1°22'13
min. Earth dist.	1481 Mar 21 j 13:49	9°♑59'17	8.67972 AU	min. Earth dist.	1487 Jun 02 j 12:30	19°♏43'25	9.09137 AU
direct	1481 May 31 j 00:19	6°♑33'43		direct	1487 Aug 12 j 11:27	16°♏25'23	
evening set	1481 Sep 13 j 09:22	14°♑09'06		evening set	1487 Nov 21 j 20:39	23°♏25'51	
conjunction	1481 Sep 30 j 11:27	16°♑12'39	2°16'24	conjunction	1487 Dec 08 j 11:21	25°♏22'07	0°55'20
minimum elong	1481 Sep 30 j 11:27	16°♑12'39	2°16'24	minimum elong	1487 Dec 08 j 11:23	25°♏22'08	0°55'21
max. Earth dist.	1481 Sep 30 j 13:01	16°♑13'08	10.73596 AU	max. Earth dist.	1487 Dec 08 j 05:57	25°♏20'32	11.08967 AU
morning rise	1481 Oct 17 j 09:14	18°♑14'54		morning rise	1487 Dec 25 j 01:16	27°♏18'15	
retrograde	1482 Jan 24 j 21:38	25°♑26'44			1488 Jan 18 j 18:11	0°♑	
opposition	1482 Apr 03 j 07:30	22°♑08'04	2°47'29	retrograde	1488 Apr 03 j 18:21	4°♑16'48	
min. Earth dist.	1482 Apr 03 j 05:56	22°♑08'22	8.79230 AU	opposition	1488 Jun 13 j 09:03	0°♑59'14	0°52'14
direct	1482 Jun 13 j 01:42	18°♑44'15		min. Earth dist.	1488 Jun 13 j 14:00	0°♑58'20	9.08271 AU
evening set	1482 Sep 25 j 19:55	26°♑11'31			1488 Jun 27 j 00:32	30°♏♏	
				direct	1488 Aug 23 j 07:21	27°♏40'48	
conjunction	1482 Oct 12 j 18:22	28°♑12'43	2°15'01		1488 Oct 16 j 22:30	0°♑	
minimum elong	1482 Oct 12 j 18:23	28°♑12'44	2°15'01	evening set	1488 Dec 02 j 02:59	4°♑39'51	
max. Earth dist.	1482 Oct 12 j 19:08	28°♑12'57	10.84278 AU				
	1482 Oct 27 j 17:27	0°♍		conjunction	1488 Dec 18 j 17:40	6°♑36'23	0°29'50
morning rise	1482 Oct 29 j 12:46	0°♍12'45		minimum elong	1488 Dec 18 j 17:41	6°♑36'24	0°29'50
retrograde	1483 Feb 05 j 22:55	7°♍18'43		max. Earth dist.	1488 Dec 18 j 10:59	6°♑34'26	11.06959 AU
opposition	1483 Apr 15 j 18:30	4°♍00'54	2°41'57	morning rise	1489 Jan 04 j 08:34	8°♑33'03	
min. Earth dist.	1483 Apr 15 j 17:43	4°♍01'03	8.89229 AU	retrograde	1489 Apr 15 j 15:23	15°♑34'45	
direct	1483 Jun 25 j 19:51	0°♍38'23		opposition	1489 Jun 25 j 11:06	12°♑16'23	0°20'07
evening set	1483 Oct 07 j 21:34	7°♍58'01		min. Earth dist.	1489 Jun 25 j 17:10	12°♑15'16	9.05091 AU
				direct	1489 Sep 04 j 00:54	8°♑58'05	
conjunction	1483 Oct 24 j 17:09	9°♍57'21	2°07'57	evening set	1489 Dec 13 j 10:23	15°♑57'15	
minimum elong	1483 Oct 24 j 17:10	9°♍57'21	2°07'56				
max. Earth dist.	1483 Oct 24 j 17:03	9°♍57'19	10.93480 AU	conjunction	1489 Dec 30 j 01:25	17°♑54'24	0°03'04



minimum elong	1489 Dec 30 j 01:24	17°♄54'24	0°03'04	evening set	1496 Feb 23 j 01:11	27°♄50'49	
behind sun begin	1489 Dec 29 j 18:28	17°♄52'22					
behind sun end	1489 Dec 30 j 08:21	17°♄56'25		conjunction	1496 Mar 11 j 03:28	29°♄58'38	-2°-8'-37
max. Earth dist.	1489 Dec 29 j 17:55	17°♄52'12	11.02687 AU	minimum elong	1496 Mar 11 j 03:26	29°♄58'37	2°08'38
morning rise	1490 Jan 15 j 17:40	19°♄51'55		max. Earth dist.	1496 Mar 11 j 00:33	29°♄57'43	10.43378 AU
desc. node	1490 Feb 09 j 15:23	22°♄36'01			1496 Mar 11 j 07:50	0°♄	
retrograde	1490 Apr 27 j 16:15	26°♄58'23		morning rise	1496 Mar 28 j 10:16	2°♄07'54	
opposition	1490 Jul 07 j 15:12	23°♄38'58	0°-13'-4	retrograde	1496 Jul 12 j 21:22	10°♄05'53	
min. Earth dist.	1490 Jul 07 j 21:31	23°♄37'47	8.99729 AU	opposition	1496 Sep 20 j 10:42	6°♄38'17	-2°-44'-31
direct	1490 Sep 15 j 21:19	20°♄20'32		min. Earth dist.	1496 Sep 20 j 12:15	6°♄37'58	8.37611 AU
evening set	1490 Dec 24 j 20:39	27°♄21'21		direct	1496 Nov 26 j 18:04	3°♄15'25	
				evening set	1497 Mar 07 j 10:38	10°♄54'34	
conjunction	1491 Jan 10 j 12:33	29°♄19'29	0°-24'-11				
minimum elong	1491 Jan 10 j 12:32	29°♄19'29	0°24'12	conjunction	1497 Mar 24 j 16:44	13°♄05'05	-2°-15'-12
max. Earth dist.	1491 Jan 10 j 05:39	29°♄17'26	10.96308 AU	minimum elong	1497 Mar 24 j 16:44	13°♄05'05	2°15'13
	1491 Jan 16 j 04:45	0°♄		max. Earth dist.	1497 Mar 24 j 15:35	13°♄04'43	10.31784 AU
morning rise	1491 Jan 27 j 06:19	1°♄18'13		morning rise	1497 Apr 11 j 03:24	15°♄17'07	
retrograde	1491 May 09 j 23:45	8°♄30'53		retrograde	1497 Jul 27 j 02:07	23°♄24'01	
opposition	1491 Jul 19 j 22:07	5°♄10'12	0°-46'-12	opposition	1497 Oct 04 j 02:13	19°♄55'21	-2°-48'-42
min. Earth dist.	1491 Jul 20 j 03:41	5°♄09'10	8.92379 AU	min. Earth dist.	1497 Oct 04 j 02:06	19°♄55'23	8.26476 AU
direct	1491 Sep 27 j 18:07	1°♄51'28		direct	1497 Dec 09 j 22:32	16°♄31'22	
evening set	1492 Jan 05 j 11:27	8°♄55'28		evening set	1498 Mar 21 j 06:34	24°♄19'21	
conjunction	1492 Jan 22 j 04:33	10°♄54'55	0°-50'-45	conjunction	1498 Apr 07 j 17:02	26°♄32'40	-2°-14'-38
minimum elong	1492 Jan 22 j 04:31	10°♄54'54	0°50'46	minimum elong	1498 Apr 07 j 17:03	26°♄32'40	2°14'40
max. Earth dist.	1492 Jan 21 j 22:24	10°♄53'04	10.88043 AU	max. Earth dist.	1498 Apr 07 j 17:15	26°♄32'44	10.21229 AU
morning rise	1492 Feb 08 j 00:07	12°♄55'11		morning rise	1498 Apr 25 j 08:00	28°♄47'27	
	1492 Feb 26 j 08:05	15°♄			1498 May 05 j 02:23	0°♄	
retrograde	1492 May 21 j 13:09	20°♄15'23		retrograde	1498 Aug 10 j 11:46	7°♄01'46	
opposition	1492 Jul 31 j 09:01	16°♄53'20	-1°-18'-3	opposition	1498 Oct 17 j 23:17	3°♄32'20	-2°-43'-37
min. Earth dist.	1492 Jul 31 j 13:51	16°♄52'26	8.83292 AU	min. Earth dist.	1498 Oct 17 j 21:58	3°♄32'36	8.16678 AU
	1492 Aug 27 j 01:25	15°♄		direct	1498 Dec 23 j 12:16	0°♄07'12	
direct	1492 Oct 08 j 16:44	13°♄34'06		evening set	1499 Apr 04 j 12:44	8°♄03'37	
	1492 Nov 19 j 01:38	15°♄					
evening set	1493 Jan 16 j 08:25	20°♄42'49		conjunction	1499 Apr 22 j 03:53	10°♄19'37	-2°-6'-28
conjunction	1493 Feb 02 j 02:54	22°♄43'54	-1°-15'-38	minimum elong	1499 Apr 22 j 03:55	10°♄19'38	2°06'29
minimum elong	1493 Feb 02 j 02:52	22°♄43'53	1°15'38	max. Earth dist.	1499 Apr 22 j 05:18	10°♄20'05	10.12334 AU
max. Earth dist.	1493 Feb 01 j 20:37	22°♄41'59	10.78193 AU	morning rise	1499 May 09 j 23:15	12°♄36'58	
morning rise	1493 Feb 19 j 00:42	24°♄46'01			1499 May 29 j 09:54	15°♄	
	1493 Apr 10 j 21:52	0°♄		retrograde	1499 Aug 25 j 01:24	20°♄56'31	
retrograde	1493 Jun 03 j 10:07	2°♄14'53		opposition	1499 Nov 01 j 00:50	17°♄26'41	-2°-28'-54
	1493 Jul 28 j 16:53	30°♄		min. Earth dist.	1499 Oct 31 j 22:46	17°♄27'06	8.08813 AU
opposition	1493 Aug 13 j 00:49	28°♄51'25	-1°-47'-17	direct	1499 Dec 04 j 07:41	15°♄	
min. Earth dist.	1493 Aug 13 j 05:26	28°♄50'32	8.72814 AU		1500 Jan 06 j 09:46	14°♄00'26	
direct	1493 Oct 20 j 19:47	25°♄31'28		evening set	1500 Feb 08 j 03:19	15°♄	
	1494 Jan 04 j 05:08	0°♄			1500 Apr 18 j 03:50	22°♄04'15	
evening set	1494 Jan 28 j 12:55	2°♄46'18		conjunction	1500 May 05 j 23:41	24°♄22'39	-1°-50'-44
conjunction	1494 Feb 14 j 09:19	4°♄49'19	-1°-37'-42	minimum elong	1500 May 05 j 23:44	24°♄22'40	1°50'45
minimum elong	1494 Feb 14 j 09:16	4°♄49'18	1°37'42	max. Earth dist.	1500 May 06 j 02:48	24°♄23'40	10.05661 AU
max. Earth dist.	1494 Feb 14 j 03:08	4°♄47'25	10.67150 AU	morning rise	1500 May 23 j 23:04	26°♄42'09	
morning rise	1494 Mar 03 j 09:48	6°♄53'35			1500 Jun 20 j 04:29	0°♄	
retrograde	1494 Jun 16 j 13:42	14°♄31'56		retrograde	1500 Sep 07 j 17:21	5°♄04'19	
opposition	1494 Aug 25 j 22:09	11°♄07'02	-2°-12'-25	opposition	1500 Nov 14 j 05:50	1°♄34'25	-2°-4'-59
min. Earth dist.	1494 Aug 26 j 02:30	11°♄06'11	8.61372 AU	min. Earth dist.	1500 Nov 14 j 02:41	1°♄35'04	8.03396 AU
direct	1494 Nov 02 j 04:08	7°♄46'12		direct	1500 Dec 04 j 01:51	30°♄	
evening set	1495 Feb 10 j 02:07	15°♄08'21			1501 Jan 19 j 13:36	28°♄07'11	
				evening set	1501 Mar 06 j 03:50	0°♄	
conjunction	1495 Feb 27 j 01:09	17°♄13'38	-1°-55'-45		1501 May 03 j 01:54	6°♄16'47	
minimum elong	1495 Feb 27 j 01:07	17°♄13'38	1°55'46	conjunction	1501 May 21 j 01:58	8°♄37'02	-1°-28'-7
max. Earth dist.	1495 Feb 26 j 20:19	17°♄12'08	10.55371 AU	minimum elong	1501 May 21 j 02:02	8°♄37'03	1°28'08
morning rise	1495 Mar 16 j 04:38	19°♄20'19		max. Earth dist.	1501 May 21 j 06:58	8°♄38'40	10.01645 AU
retrograde	1495 Jun 30 j 01:04	27°♄08'34		morning rise	1501 Jun 08 j 04:32	10°♄58'03	
opposition	1495 Sep 08 j 01:25	23°♄42'14	-2°-31'-59	retrograde	1501 Sep 22 j 09:52	19°♄19'58	
min. Earth dist.	1495 Sep 08 j 04:41	23°♄41'35	8.49451 AU	opposition	1501 Nov 28 j 12:32	15°♄50'21	-1°-33'-8
direct	1495 Nov 14 j 20:01	20°♄20'26		min. Earth dist.	1501 Nov 28 j 08:09	15°♄51'15	8.00777 AU



direct	1502 Feb 02 j 22:59	12° $\Pi$ 22'15		minimum elong	1507 Aug 17 j 10:41	2° $\mathbb{M}$ 45'27	1°33'26
evening set	1502 May 18 j 04:56	20° $\Pi$ 35'45		max. Earth dist.	1507 Aug 17 j 15:04	2° $\mathbb{M}$ 46'50	10.32691 AU
				morning rise	1507 Sep 04 j 01:10	4° $\mathbb{M}$ 57'53	
conjunction	1502 Jun 05 j 08:11	22° $\Pi$ 57'02	0°-59'-58	retrograde	1507 Dec 14 j 05:16	12° $\mathbb{M}$ 38'03	
minimum elong	1502 Jun 05 j 08:14	22° $\Pi$ 57'03	0°59'59	opposition	1508 Feb 19 j 04:59	9° $\mathbb{M}$ 15'09	2°08'51
max. Earth dist.	1502 Jun 05 j 14:41	22° $\Pi$ 59'10	10.00529 AU	min. Earth dist.	1508 Feb 19 j 01:20	9° $\mathbb{M}$ 15'53	8.38327 AU
morning rise	1502 Jun 23 j 12:33	25° $\Pi$ 18'41		direct	1508 Apr 28 j 09:17	5° $\mathbb{M}$ 47'15	
	1502 Aug 02 j 15:03	0° $\mathfrak{S}$		evening set	1508 Aug 12 j 15:15	13° $\mathbb{M}$ 42'59	
retrograde	1502 Oct 06 j 23:52	3° $\mathfrak{S}$ 37'31					
opposition	1502 Dec 12 j 19:06	0° $\mathfrak{S}$ 08'31	0°-55'-25	conjunction	1508 Aug 30 j 04:57	15° $\mathbb{M}$ 53'42	1°53'34
min. Earth dist.	1502 Dec 12 j 13:38	0° $\mathfrak{S}$ 09'39	8.01093 AU	minimum elong	1508 Aug 30 j 04:54	15° $\mathbb{M}$ 53'41	1°53'34
	1502 Dec 14 j 12:16	30° $\mathbb{R}$ $\Pi$		max. Earth dist.	1508 Aug 30 j 08:29	15° $\mathbb{M}$ 54'48	10.44039 AU
direct	1503 Feb 17 j 11:57	26° $\Pi$ 39'45		morning rise	1508 Sep 16 j 14:06	18° $\mathbb{M}$ 03'00	
	1503 Apr 20 j 21:03	0° $\mathfrak{S}$		retrograde	1508 Dec 26 j 02:23	25° $\mathbb{M}$ 34'15	
evening set	1503 Jun 02 j 09:52	4° $\mathfrak{S}$ 54'58		opposition	1509 Mar 03 j 10:37	22° $\mathbb{M}$ 12'37	2°29'42
				min. Earth dist.	1509 Mar 03 j 07:09	22° $\mathbb{M}$ 13'18	8.49987 AU
conjunction	1503 Jun 20 j 14:42	7° $\mathfrak{S}$ 16'22	0°-28'-8	direct	1509 May 12 j 04:17	18° $\mathbb{M}$ 45'38	
minimum elong	1503 Jun 20 j 14:43	7° $\mathfrak{S}$ 16'22	0°28'09	evening set	1509 Aug 26 j 03:37	26° $\mathbb{M}$ 33'30	
max. Earth dist.	1503 Jun 20 j 22:10	7° $\mathfrak{S}$ 18'48	10.02320 AU				
morning rise	1503 Jul 08 j 19:11	9° $\mathfrak{S}$ 37'41		conjunction	1509 Sep 12 j 12:27	28° $\mathbb{M}$ 41'12	2°07'32
retrograde	1503 Oct 21 j 09:31	17° $\mathfrak{S}$ 51'06		minimum elong	1509 Sep 12 j 12:25	28° $\mathbb{M}$ 41'12	2°07'33
opposition	1503 Dec 27 j 00:08	14° $\mathfrak{S}$ 22'58	0°-14'-26	max. Earth dist.	1509 Sep 12 j 15:37	28° $\mathbb{M}$ 42'11	10.55797 AU
min. Earth dist.	1503 Dec 26 j 18:11	14° $\mathfrak{S}$ 24'12	8.04233 AU		1509 Sep 23 j 04:23	0° $\mathfrak{L}$	
direct	1504 Mar 03 j 01:50	10° $\mathfrak{S}$ 53'47		morning rise	1509 Sep 29 j 16:28	0° $\mathfrak{L}$ 47'28	
asc. node	1504 May 06 j 12:52	14° $\mathfrak{S}$ 24'01		retrograde	1510 Jan 07 j 18:03	8° $\mathfrak{L}$ 10'21	
evening set	1504 Jun 16 j 13:28	19° $\mathfrak{S}$ 08'34		opposition	1510 Mar 16 j 10:32	4° $\mathfrak{L}$ 49'52	2°42'40
				min. Earth dist.	1510 Mar 16 j 07:47	4° $\mathfrak{L}$ 50'24	8.61752 AU
conjunction	1504 Jul 04 j 18:03	21° $\mathfrak{S}$ 29'09	0°05'16	direct	1510 May 25 j 14:35	1° $\mathfrak{L}$ 23'57	
minimum elong	1504 Jul 04 j 18:03	21° $\mathfrak{S}$ 29'09	0°05'16	evening set	1510 Sep 08 j 05:06	9° $\mathfrak{L}$ 03'31	
behind sun begin	1504 Jul 04 j 10:57	21° $\mathfrak{S}$ 26'52					
behind sun end	1504 Jul 05 j 01:10	21° $\mathfrak{S}$ 31'26		conjunction	1510 Sep 25 j 09:20	11° $\mathfrak{L}$ 08'24	2°15'06
max. Earth dist.	1504 Jul 05 j 01:34	21° $\mathfrak{S}$ 31'34	10.06781 AU	minimum elong	1510 Sep 25 j 09:19	11° $\mathfrak{L}$ 08'23	2°15'07
morning rise	1504 Jul 22 j 20:57	23° $\mathfrak{S}$ 49'13		max. Earth dist.	1510 Sep 25 j 11:50	11° $\mathfrak{L}$ 09'09	10.67374 AU
	1504 Sep 18 j 03:38	0° $\mathbb{Q}$		morning rise	1510 Oct 12 j 08:46	13° $\mathfrak{L}$ 11'53	
retrograde	1504 Nov 03 j 13:35	1° $\mathbb{Q}$ 55'33		retrograde	1511 Jan 20 j 01:10	20° $\mathfrak{L}$ 27'13	
	1504 Dec 20 j 20:46	30° $\mathbb{R}$ $\mathfrak{S}$		opposition	1511 Mar 29 j 04:57	17° $\mathfrak{L}$ 07'45	2°47'45
opposition	1505 Jan 09 j 02:12	28° $\mathfrak{S}$ 28'34	0°26'57	min. Earth dist.	1511 Mar 29 j 03:36	17° $\mathfrak{L}$ 08'01	8.73062 AU
min. Earth dist.	1505 Jan 08 j 20:41	28° $\mathfrak{S}$ 29'42	8.09890 AU	direct	1511 Jun 07 j 18:44	13° $\mathfrak{L}$ 42'58	
direct	1505 Mar 17 j 14:18	24° $\mathfrak{S}$ 59'16		evening set	1511 Sep 20 j 20:15	21° $\mathfrak{L}$ 14'15	
	1505 Jun 04 j 20:56	0° $\mathbb{Q}$					
evening set	1505 Jul 01 j 13:24	3° $\mathbb{Q}$ 11'47		conjunction	1511 Oct 07 j 20:22	23° $\mathfrak{L}$ 16'37	2°16'23
				minimum elong	1511 Oct 07 j 20:22	23° $\mathfrak{L}$ 16'37	2°16'24
conjunction	1505 Jul 19 j 16:00	5° $\mathbb{Q}$ 30'43	0°37'52	max. Earth dist.	1511 Oct 07 j 21:19	23° $\mathfrak{L}$ 16'54	10.78251 AU
minimum elong	1505 Jul 19 j 15:58	5° $\mathbb{Q}$ 30'42	0°37'51	morning rise	1511 Oct 24 j 16:11	25° $\mathfrak{L}$ 17'44	
max. Earth dist.	1505 Jul 19 j 22:40	5° $\mathbb{Q}$ 32'52	10.13573 AU		1511 Dec 08 j 16:12	0° $\mathbb{M}$	
morning rise	1505 Aug 06 j 15:46	7° $\mathbb{Q}$ 48'46		retrograde	1512 Feb 01 j 02:55	2° $\mathbb{M}$ 26'35	
	1505 Oct 19 j 07:40	15° $\mathbb{Q}$			1512 Mar 29 j 04:35	30° $\mathbb{R}$ $\mathfrak{L}$	
retrograde	1505 Nov 17 j 11:22	15° $\mathbb{Q}$ 46'53		opposition	1512 Apr 09 j 18:10	29° $\mathfrak{L}$ 07'58	2°45'20
	1505 Dec 16 j 19:14	15° $\mathbb{R}$ $\mathbb{Q}$		min. Earth dist.	1512 Apr 09 j 18:17	29° $\mathfrak{L}$ 07'57	8.83427 AU
opposition	1506 Jan 23 j 00:07	12° $\mathbb{Q}$ 21'14	1°06'04	direct	1512 Jun 19 j 16:04	25° $\mathfrak{L}$ 44'20	
min. Earth dist.	1506 Jan 22 j 19:26	12° $\mathbb{Q}$ 22'12	8.17733 AU		1512 Sep 03 j 16:35	0° $\mathbb{M}$	
direct	1506 Mar 31 j 23:59	8° $\mathbb{Q}$ 52'07		evening set	1512 Oct 02 j 01:56	3° $\mathbb{M}$ 07'45	
	1506 Jun 29 j 18:00	15° $\mathbb{Q}$					
evening set	1506 Jul 16 j 07:05	17° $\mathbb{Q}$ 00'35		conjunction	1512 Oct 18 j 22:42	5° $\mathbb{M}$ 08'01	2°11'45
				minimum elong	1512 Oct 18 j 22:43	5° $\mathbb{M}$ 08'01	2°11'44
conjunction	1506 Aug 03 j 06:11	19° $\mathbb{Q}$ 17'11	1°07'49	max. Earth dist.	1512 Oct 18 j 21:47	5° $\mathbb{M}$ 07'44	10.87974 AU
minimum elong	1506 Aug 03 j 06:08	19° $\mathbb{Q}$ 17'10	1°07'49	morning rise	1512 Nov 04 j 15:51	7° $\mathbb{M}$ 07'12	
max. Earth dist.	1506 Aug 03 j 11:42	19° $\mathbb{Q}$ 18'56	10.22355 AU	retrograde	1513 Feb 11 j 23:55	14° $\mathbb{M}$ 10'49	
morning rise	1506 Aug 21 j 01:39	21° $\mathbb{Q}$ 32'36		opposition	1513 Apr 22 j 02:53	10° $\mathbb{M}$ 52'49	2°36'00
retrograde	1506 Dec 01 j 01:01	29° $\mathbb{Q}$ 21'51		min. Earth dist.	1513 Apr 22 j 03:39	10° $\mathbb{M}$ 52'40	8.92414 AU
opposition	1507 Feb 05 j 17:20	25° $\mathbb{Q}$ 57'35	1°40'37	direct	1513 Jul 02 j 06:18	7° $\mathbb{M}$ 30'21	
min. Earth dist.	1507 Feb 05 j 13:24	25° $\mathbb{Q}$ 58'23	8.27379 AU	evening set	1513 Oct 13 j 23:32	14° $\mathbb{M}$ 46'37	
direct	1507 Apr 15 j 07:10	22° $\mathbb{Q}$ 28'57			1513 Oct 15 j 21:33	15° $\mathbb{M}$	
	1507 Jul 26 j 08:51	0° $\mathbb{M}$					
evening set	1507 Jul 30 j 16:09	0° $\mathbb{M}$ 31'42		conjunction	1513 Oct 30 j 17:50	16° $\mathbb{M}$ 45'13	2°01'42
				minimum elong	1513 Oct 30 j 17:52	16° $\mathbb{M}$ 45'14	2°01'41
conjunction	1507 Aug 17 j 10:44	2° $\mathbb{M}$ 45'28	1°33'26	max. Earth dist.	1513 Oct 30 j 16:11	16° $\mathbb{M}$ 44'44	10.96148 AU



morning rise	1513 Nov 16 j 08:59	18° $\mathbb{M}$ 42'56		morning rise	1520 Jan 22 j 12:59	26° $\mathfrak{Z}$ 28'35	
retrograde	1514 Feb 23 j 18:41	25° $\mathbb{M}$ 42'43			1520 Feb 24 j 08:40	0° $\approx$	
opposition	1514 May 04 j 07:59	22° $\mathbb{M}$ 25'09	2°20'30	retrograde	1520 May 03 j 22:07	3° $\approx$ 37'25	
min. Earth dist.	1514 May 04 j 09:01	22° $\mathbb{M}$ 24'57	8.99677 AU	opposition	1520 Jul 13 j 20:17	0° $\approx$ 17'47	0°-31'-33
direct	1514 Jul 14 j 15:32	19° $\mathbb{M}$ 03'48		min. Earth dist.	1520 Jul 14 j 00:53	0° $\approx$ 16'56	8.97944 AU
evening set	1514 Oct 25 j 14:39	26° $\mathbb{M}$ 13'53			1520 Jul 17 j 20:17	30° $\mathbb{R}$ $\mathfrak{Z}$	
				direct	1520 Sep 21 j 19:38	26° $\mathfrak{Z}$ 59'43	
conjunction	1514 Nov 11 j 07:14	28° $\mathbb{M}$ 11'17	1°46'54		1520 Nov 22 j 16:38	0° $\approx$	
minimum elong	1514 Nov 11 j 07:17	28° $\mathbb{M}$ 11'18	1°46'54	evening set	1520 Dec 30 j 16:52	4° $\approx$ 01'16	
max. Earth dist.	1514 Nov 11 j 05:24	28° $\mathbb{M}$ 10'45	11.02475 AU				
	1514 Nov 26 j 17:33	0° $\mathfrak{Z}$		conjunction	1521 Jan 16 j 09:05	5° $\approx$ 59'48	0°-39'-3
morning rise	1514 Nov 27 j 21:08	0° $\mathfrak{Z}$ 07'59		minimum elong	1521 Jan 16 j 09:04	5° $\approx$ 59'48	0°39'04
retrograde	1515 Mar 07 j 12:50	7° $\mathfrak{Z}$ 05'24		max. Earth dist.	1521 Jan 16 j 02:58	5° $\approx$ 57'59	10.94314 AU
opposition	1515 May 16 j 10:38	3° $\mathfrak{Z}$ 48'04	1°59'41	morning rise	1521 Feb 02 j 03:47	7° $\approx$ 59'04	
min. Earth dist.	1515 May 16 j 12:34	3° $\mathfrak{Z}$ 47'42	9.04962 AU		1521 Apr 28 j 23:22	15° $\approx$	
direct	1515 Jul 26 j 17:44	0° $\mathfrak{Z}$ 27'45		retrograde	1521 May 16 j 06:28	15° $\approx$ 14'39	
evening set	1515 Nov 06 j 00:54	7° $\mathfrak{Z}$ 32'48			1521 Jun 02 j 18:13	15° $\mathbb{R}$ $\approx$	
				opposition	1521 Jul 26 j 04:48	11° $\approx$ 53'53	-1°-4'-1
conjunction	1515 Nov 22 j 16:16	9° $\mathfrak{Z}$ 29'27	1°28'03	min. Earth dist.	1521 Jul 26 j 09:46	11° $\approx$ 52'58	8.90203 AU
minimum elong	1515 Nov 22 j 16:19	9° $\mathfrak{Z}$ 29'27	1°28'03	direct	1521 Oct 03 j 17:39	8° $\approx$ 35'33	
max. Earth dist.	1515 Nov 22 j 13:07	9° $\mathfrak{Z}$ 28'31	11.06725 AU		1522 Jan 05 j 13:42	15° $\approx$	
morning rise	1515 Dec 09 j 05:50	11° $\mathfrak{Z}$ 25'36		evening set	1522 Jan 11 j 10:07	15° $\approx$ 40'56	
retrograde	1516 Mar 18 j 04:18	18° $\mathfrak{Z}$ 22'10					
opposition	1516 May 27 j 11:38	15° $\mathfrak{Z}$ 04'51	1°34'27	conjunction	1522 Jan 28 j 03:43	17° $\approx$ 40'53	-1°-4'-44
min. Earth dist.	1516 May 27 j 15:00	15° $\mathfrak{Z}$ 04'14	9.08084 AU	minimum elong	1522 Jan 28 j 03:41	17° $\approx$ 40'53	1°04'44
direct	1516 Aug 06 j 15:44	11° $\mathfrak{Z}$ 45'23		max. Earth dist.	1522 Jan 27 j 22:20	17° $\approx$ 39'16	10.85696 AU
evening set	1516 Nov 16 j 08:11	18° $\mathfrak{Z}$ 46'49		morning rise	1522 Feb 14 j 00:22	19° $\approx$ 41'47	
				retrograde	1522 May 28 j 23:25	27° $\approx$ 05'21	
conjunction	1516 Dec 02 j 22:51	20° $\mathfrak{Z}$ 43'05	1°05'54	opposition	1522 Aug 07 j 17:35	23° $\approx$ 43'17	-1°-34'-27
minimum elong	1516 Dec 02 j 22:53	20° $\mathfrak{Z}$ 43'05	1°05'54	min. Earth dist.	1522 Aug 07 j 21:51	23° $\approx$ 42'29	8.80807 AU
max. Earth dist.	1516 Dec 02 j 18:10	20° $\mathfrak{Z}$ 41'42	11.08749 AU	direct	1522 Oct 15 j 19:34	20° $\approx$ 24'27	
morning rise	1516 Dec 19 j 12:41	22° $\mathfrak{Z}$ 39'07		evening set	1523 Jan 23 j 10:17	27° $\approx$ 35'03	
retrograde	1517 Mar 29 j 21:51	29° $\mathfrak{Z}$ 36'25					
opposition	1517 Jun 08 j 11:57	26° $\mathfrak{Z}$ 18'52	1°05'43	conjunction	1523 Feb 09 j 05:41	29° $\approx$ 36'45	-1°-28'-7
min. Earth dist.	1517 Jun 08 j 16:05	26° $\mathfrak{Z}$ 18'07	9.08930 AU	minimum elong	1523 Feb 09 j 05:39	29° $\approx$ 36'45	1°28'07
direct	1517 Aug 18 j 13:14	23° $\mathfrak{Z}$ 00'05		max. Earth dist.	1523 Feb 09 j 01:04	29° $\approx$ 35'21	10.75553 AU
evening set	1517 Nov 27 j 14:03	29° $\mathfrak{Z}$ 59'17			1523 Feb 12 j 10:08	0° $\mathfrak{H}$	
	1517 Nov 27 j 16:34	0° $\mathfrak{Z}$		morning rise	1523 Feb 26 j 04:35	1° $\mathfrak{H}$ 39'36	
conjunction	1517 Dec 14 j 04:38	1° $\mathfrak{Z}$ 55'35	0°41'15	retrograde	1523 Jun 10 j 23:37	9° $\mathfrak{H}$ 12'03	
minimum elong	1517 Dec 14 j 04:39	1° $\mathfrak{Z}$ 55'35	0°41'15	opposition	1523 Aug 20 j 11:12	5° $\mathfrak{H}$ 48'35	-2°-1'-28
max. Earth dist.	1517 Dec 13 j 23:47	1° $\mathfrak{Z}$ 54'10	11.08473 AU	min. Earth dist.	1523 Aug 20 j 14:46	5° $\mathfrak{H}$ 47'55	8.70057 AU
morning rise	1517 Dec 30 j 19:06	3° $\mathfrak{Z}$ 51'53		direct	1523 Oct 27 j 23:34	2° $\mathfrak{H}$ 29'00	
retrograde	1518 Apr 10 j 17:39	10° $\mathfrak{Z}$ 51'31		evening set	1524 Feb 04 j 18:34	9° $\mathfrak{H}$ 46'12	
opposition	1518 Jun 20 j 12:54	7° $\mathfrak{Z}$ 33'29	0°34'26				
min. Earth dist.	1518 Jun 20 j 16:41	7° $\mathfrak{Z}$ 32'47	9.07475 AU	conjunction	1524 Feb 21 j 16:10	11° $\mathfrak{H}$ 49'58	-1°-48'-2
direct	1518 Aug 30 j 07:39	4° $\mathfrak{Z}$ 15'11		minimum elong	1524 Feb 21 j 16:08	11° $\mathfrak{H}$ 49'57	1°48'03
evening set	1518 Dec 08 j 20:12	11° $\mathfrak{Z}$ 13'37		max. Earth dist.	1524 Feb 21 j 11:25	11° $\mathfrak{H}$ 48'30	10.64228 AU
				morning rise	1524 Mar 09 j 17:50	13° $\mathfrak{H}$ 55'02	
conjunction	1518 Dec 25 j 11:06	13° $\mathfrak{Z}$ 10'19	0°14'57	retrograde	1524 Jun 23 j 06:49	21° $\mathfrak{H}$ 37'05	
minimum elong	1518 Dec 25 j 11:07	13° $\mathfrak{Z}$ 10'19	0°14'57	opposition	1524 Sep 01 j 10:38	18° $\mathfrak{H}$ 12'12	-2°-23'-38
behind sun begin	1518 Dec 25 j 08:16	13° $\mathfrak{Z}$ 09'29		min. Earth dist.	1524 Sep 01 j 13:54	18° $\mathfrak{H}$ 11'34	8.58328 AU
behind sun end	1518 Dec 25 j 13:58	13° $\mathfrak{Z}$ 11'09		direct	1524 Nov 08 j 10:35	14° $\mathfrak{H}$ 51'40	
max. Earth dist.	1518 Dec 25 j 06:35	13° $\mathfrak{Z}$ 09'00	11.05901 AU	evening set	1525 Feb 16 j 11:56	22° $\mathfrak{H}$ 16'37	
morning rise	1519 Jan 11 j 02:32	15° $\mathfrak{Z}$ 07'15					
retrograde	1519 Apr 22 j 18:12	22° $\mathfrak{Z}$ 10'47		conjunction	1525 Mar 05 j 12:17	24° $\mathfrak{H}$ 22'46	-2°-3'-20
opposition	1519 Jul 02 j 15:24	18° $\mathfrak{Z}$ 52'02	0°01'39	minimum elong	1525 Mar 05 j 12:15	24° $\mathfrak{H}$ 22'46	2°03'21
min. Earth dist.	1519 Jul 02 j 19:18	18° $\mathfrak{Z}$ 51'19	9.03769 AU	max. Earth dist.	1525 Mar 05 j 07:17	24° $\mathfrak{H}$ 21'13	10.52176 AU
desc. node	1519 Jul 21 j 09:32	17° $\mathfrak{Z}$ 31'27		morning rise	1525 Mar 22 j 17:16	26° $\mathfrak{H}$ 30'22	
direct	1519 Sep 11 j 01:58	15° $\mathfrak{Z}$ 33'59			1525 Apr 22 j 06:53	0° $\mathbb{Y}$	
evening set	1519 Dec 20 j 04:41	22° $\mathfrak{Z}$ 33'11		retrograde	1525 Jul 06 j 22:25	4° $\mathbb{Y}$ 22'16	
				opposition	1525 Sep 14 j 16:15	0° $\mathbb{Y}$ 56'01	-2°-39'-29
conjunction	1520 Jan 05 j 20:05	24° $\mathfrak{Z}$ 30'39	0°-12'-10	min. Earth dist.	1525 Sep 14 j 19:26	0° $\mathbb{Y}$ 55'23	8.46171 AU
minimum elong	1520 Jan 05 j 20:04	24° $\mathfrak{Z}$ 30'39	0°12'12		1525 Sep 26 j 17:53	30° $\mathbb{R}$ $\mathfrak{H}$	
behind sun begin	1520 Jan 05 j 15:18	24° $\mathfrak{Z}$ 29'15		direct	1525 Nov 21 j 04:13	27° $\mathfrak{H}$ 34'20	
behind sun end	1520 Jan 06 j 00:51	24° $\mathfrak{Z}$ 32'03			1526 Jan 13 j 06:21	0° $\mathbb{Y}$	
max. Earth dist.	1520 Jan 05 j 14:44	24° $\mathfrak{Z}$ 29'05	11.01125 AU	evening set	1526 Mar 01 j 15:26	5° $\mathbb{Y}$ 07'51	



conjunction	1526 Mar 18 j 19:19	7°Υ16'39	-2°-12'-53	minimum elong	1532 Jun 12 j 17:00	0°♄41'24	0°43'47
minimum elong	1526 Mar 18 j 19:18	7°Υ16'39	2°12'55	max. Earth dist.	1532 Jun 12 j 21:51	0°♄42'58	10.00403 AU
max. Earth dist.	1526 Mar 18 j 15:19	7°Υ15'24	10.40034 AU	morning rise	1532 Jun 30 j 21:42	3°♄03'01	
morning rise	1526 Apr 05 j 04:04	9°Υ26'59		retrograde	1532 Oct 13 j 21:55	11°♄19'17	
retrograde	1526 Jul 20 j 21:26	17°Υ28'17		opposition	1532 Dec 19 j 15:04	7°♄50'12	0°-34'-23
opposition	1526 Sep 28 j 03:53	14°Υ00'43	-2°-47'-38	min. Earth dist.	1532 Dec 19 j 11:00	7°♄51'02	8.01420 AU
min. Earth dist.	1526 Sep 28 j 06:18	14°Υ00'15	8.34266 AU	direct	1533 Feb 24 j 12:48	4°♄20'36	
direct	1526 Dec 04 j 05:14	10°Υ37'46		evening set	1533 Jun 09 j 17:00	12°♄35'57	
evening set	1527 Mar 15 j 05:21	18°Υ20'13					
conjunction	1527 Apr 01 j 13:31	20°Υ31'49	-2°-15'-44	conjunction	1533 Jun 27 j 21:51	14°♄57'09	0°-10'-55
minimum elong	1527 Apr 01 j 13:31	20°Υ31'49	2°15'46	minimum elong	1533 Jun 27 j 21:52	14°♄57'09	0°10'56
max. Earth dist.	1527 Apr 01 j 11:22	20°Υ31'08	10.28489 AU	behind sun begin	1533 Jun 27 j 16:23	14°♄55'23	
morning rise	1527 Apr 19 j 02:20	22°Υ44'56		behind sun end	1533 Jun 28 j 03:21	14°♄58'55	
	1527 Jul 02 j 14:58	0°♄		max. Earth dist.	1533 Jun 28 j 03:23	14°♄58'56	10.03148 AU
retrograde	1527 Aug 04 j 02:02	0°♄54'31		morning rise	1533 Jul 16 j 02:00	17°♄18'04	
	1527 Sep 05 j 18:38	30°♄Υ		retrograde	1533 Oct 28 j 04:14	25°♄28'16	
opposition	1527 Oct 11 j 21:17	27°Υ25'50	-2°-46'-59	asc. node	1533 Oct 29 j 18:23	25°♄28'08	
min. Earth dist.	1527 Oct 11 j 22:17	27°Υ25'38	8.23286 AU	opposition	1534 Jan 02 j 18:33	22°♄00'08	0°07'08
direct	1527 Dec 17 j 15:29	24°Υ01'34		min. Earth dist.	1534 Jan 02 j 13:46	22°♄01'08	8.05568 AU
	1528 Mar 12 j 22:08	0°♄		direct	1534 Mar 11 j 02:22	18°♄30'14	
evening set	1528 Mar 28 j 05:32	1°♄52'44		evening set	1534 Jun 24 j 19:01	26°♄44'23	
conjunction	1528 Apr 14 j 18:21	4°♄07'09	-2°-11'-11	conjunction	1534 Jul 12 j 22:49	29°♄04'22	0°22'22
minimum elong	1528 Apr 14 j 18:23	4°♄07'10	2°11'13	minimum elong	1534 Jul 12 j 22:48	29°♄04'22	0°22'22
max. Earth dist.	1528 Apr 14 j 18:28	4°♄07'11	10.18209 AU	max. Earth dist.	1534 Jul 13 j 04:59	29°♄06'21	10.08664 AU
morning rise	1528 May 02 j 11:24	6°♄22'58			1534 Jul 20 j 02:58	0°♄	
retrograde	1528 Aug 17 j 12:41	14°♄39'02		morning rise	1534 Jul 31 j 00:31	1°♄23'38	
opposition	1528 Oct 24 j 19:42	11°♄09'32	-2°-36'-53	retrograde	1534 Nov 11 j 04:52	9°♄26'11	
min. Earth dist.	1528 Oct 24 j 18:51	11°♄09'42	8.13876 AU	opposition	1535 Jan 16 j 18:31	5°♄59'15	0°47'40
direct	1528 Dec 30 j 08:02	7°♄43'56		min. Earth dist.	1535 Jan 16 j 13:04	6°♄00'22	8.12341 AU
	1529 Apr 05 j 22:19	15°♄		direct	1535 Mar 25 j 13:50	2°♄29'25	
evening set	1529 Apr 11 j 15:16	15°♄43'07		evening set	1535 Jul 09 j 15:52	10°♄40'19	
conjunction	1529 Apr 29 j 08:54	18°♄00'10	-1°-59'-2	conjunction	1535 Jul 27 j 16:58	12°♄58'15	0°53'50
minimum elong	1529 Apr 29 j 08:57	18°♄00'11	1°59'04	minimum elong	1535 Jul 27 j 16:55	12°♄58'15	0°53'50
max. Earth dist.	1529 Apr 29 j 10:49	18°♄00'47	10.09821 AU	max. Earth dist.	1535 Jul 27 j 23:35	13°♄00'23	10.16593 AU
morning rise	1529 May 17 j 06:09	20°♄18'25			1535 Aug 12 j 14:36	15°♄	
retrograde	1529 Sep 01 j 03:35	28°♄38'37		morning rise	1535 Aug 14 j 14:46	15°♄15'09	
opposition	1529 Nov 07 j 22:09	25°♄08'37	-2°-17'-21	retrograde	1535 Nov 24 j 22:42	23°♄09'02	
min. Earth dist.	1529 Nov 07 j 19:54	25°♄09'05	8.06614 AU	opposition	1536 Jan 30 j 14:04	19°♄43'30	1°24'40
direct	1530 Jan 13 j 06:48	21°♄41'44		min. Earth dist.	1536 Jan 30 j 08:24	19°♄44'39	8.21317 AU
evening set	1530 Apr 26 j 09:11	29°♄47'45		direct	1536 Apr 07 j 22:15	16°♄14'05	
	1530 Apr 27 j 23:30	0°♄		evening set	1536 Jul 23 j 05:02	24°♄19'56	
conjunction	1530 May 14 j 07:19	2°♄07'00	-1°-39'-39	conjunction	1536 Aug 10 j 02:09	26°♄35'14	1°21'42
minimum elong	1530 May 14 j 07:23	2°♄07'01	1°39'40	minimum elong	1536 Aug 10 j 02:06	26°♄35'13	1°21'42
max. Earth dist.	1530 May 14 j 10:30	2°♄08'03	10.03841 AU	max. Earth dist.	1536 Aug 10 j 08:48	26°♄37'20	10.26450 AU
morning rise	1530 Jun 01 j 08:17	4°♄27'12		morning rise	1536 Aug 27 j 19:06	28°♄49'14	
retrograde	1530 Sep 15 j 20:13	12°♄48'48			1536 Sep 06 j 10:21	0°♄	
opposition	1530 Nov 22 j 03:17	9°♄18'43	-1°-49'-12	retrograde	1536 Dec 07 j 07:56	6°♄34'03	
min. Earth dist.	1530 Nov 22 j 00:14	9°♄19'21	8.01951 AU	opposition	1537 Feb 12 j 04:21	3°♄10'00	1°56'06
direct	1531 Jan 27 j 12:16	5°♄50'41		min. Earth dist.	1537 Feb 11 j 23:17	3°♄11'01	8.31948 AU
evening set	1531 May 11 j 09:15	14°♄01'53			1537 Apr 03 j 03:44	30°♄♄	
conjunction	1531 May 29 j 11:02	16°♄22'40	-1°-14'-1	direct	1537 Apr 22 j 01:43	29°♄41'20	
minimum elong	1531 May 29 j 11:05	16°♄22'41	1°14'02		1537 May 10 j 23:48	0°♄	
max. Earth dist.	1531 May 29 j 15:11	16°♄24'01	10.00634 AU	evening set	1537 Aug 06 j 09:09	7°♄40'44	
morning rise	1531 Jun 16 j 14:36	18°♄44'02		conjunction	1537 Aug 24 j 01:28	9°♄53'03	1°44'34
retrograde	1531 Sep 30 j 11:03	27°♄04'15		minimum elong	1537 Aug 24 j 01:24	9°♄53'02	1°44'34
opposition	1531 Dec 06 j 09:25	23°♄34'29	-1°-14'-6	max. Earth dist.	1537 Aug 24 j 07:15	9°♄54'52	10.37652 AU
min. Earth dist.	1531 Dec 06 j 05:51	23°♄35'14	8.00180 AU	morning rise	1537 Sep 10 j 13:08	12°♄03'56	
direct	1532 Feb 10 j 23:24	20°♄05'32		retrograde	1537 Dec 20 j 09:42	19°♄39'39	
evening set	1532 May 25 j 12:51	28°♄19'55		opposition	1538 Feb 25 j 12:52	16°♄17'08	2°20'35
	1532 Jun 07 j 10:13	0°♄		min. Earth dist.	1538 Feb 25 j 09:02	16°♄17'54	8.43629 AU
conjunction	1532 Jun 12 j 16:58	0°♄41'23	0°-43'-45	direct	1538 May 05 j 22:50	12°♄49'28	
				evening set	1538 Aug 20 j 02:56	20°♄41'25	



conjunction	1538 Sep 06 j 14:07	22° $\mathbb{M}$ 50'38	2°01'32		1544 Oct 08 j 07:59	0° $\mathbb{Z}$	
minimum elong	1538 Sep 06 j 14:04	22° $\mathbb{M}$ 50'37	2°01'32	evening set	1544 Oct 31 j 02:12	2° $\mathbb{Z}$ 30'14	
max. Earth dist.	1538 Sep 06 j 18:13	22° $\mathbb{M}$ 51'55	10.49587 AU				
morning rise	1538 Sep 23 j 20:37	24° $\mathbb{M}$ 58'25		conjunction	1544 Nov 16 j 18:03	4° $\mathbb{Z}$ 27'11	1°37'16
	1538 Nov 09 j 20:03	0° $\mathbb{L}$		minimum elong	1544 Nov 16 j 18:05	4° $\mathbb{Z}$ 27'11	1°37'17
retrograde	1539 Jan 02 j 03:42	2° $\mathbb{L}$ 25'27		max. Earth dist.	1544 Nov 16 j 14:21	4° $\mathbb{Z}$ 26'05	11.05644 AU
	1539 Feb 26 j 15:28	30° $\mathbb{R}$ $\mathbb{M}$		morning rise	1544 Dec 03 j 07:48	6° $\mathbb{Z}$ 23'33	
opposition	1539 Mar 10 j 15:44	29° $\mathbb{M}$ 04'23	2°37'20	retrograde	1545 Mar 13 j 02:39	13° $\mathbb{Z}$ 20'30	
min. Earth dist.	1539 Mar 10 j 12:41	29° $\mathbb{M}$ 04'59	8.55737 AU	opposition	1545 May 22 j 05:21	10° $\mathbb{Z}$ 03'39	1°46'41
direct	1539 May 19 j 13:22	25° $\mathbb{M}$ 37'55		min. Earth dist.	1545 May 22 j 08:23	10° $\mathbb{Z}$ 03'05	9.07427 AU
	1539 Aug 03 j 14:52	0° $\mathbb{L}$		direct	1545 Aug 01 j 11:17	6° $\mathbb{Z}$ 44'13	
evening set	1539 Sep 02 j 09:45	3° $\mathbb{L}$ 21'46		evening set	1545 Nov 11 j 11:08	13° $\mathbb{Z}$ 47'29	
conjunction	1539 Sep 19 j 16:03	5° $\mathbb{L}$ 28'01	2°12'10	conjunction	1545 Nov 28 j 02:12	15° $\mathbb{Z}$ 43'54	1°16'34
minimum elong	1539 Sep 19 j 16:01	5° $\mathbb{L}$ 28'01	2°12'10	minimum elong	1545 Nov 28 j 02:14	15° $\mathbb{Z}$ 43'55	1°16'35
max. Earth dist.	1539 Sep 19 j 18:51	5° $\mathbb{L}$ 28'53	10.61649 AU	max. Earth dist.	1545 Nov 27 j 22:02	15° $\mathbb{Z}$ 42'41	11.08450 AU
morning rise	1539 Oct 06 j 17:49	7° $\mathbb{L}$ 32'53		morning rise	1545 Dec 14 j 15:44	17° $\mathbb{Z}$ 39'58	
retrograde	1540 Jan 14 j 13:29	14° $\mathbb{L}$ 52'01		retrograde	1546 Mar 24 j 21:44	24° $\mathbb{Z}$ 37'01	
opposition	1540 Mar 22 j 12:55	11° $\mathbb{L}$ 32'12	2°46'08	opposition	1546 Jun 03 j 06:27	21° $\mathbb{Z}$ 19'57	1°19'28
min. Earth dist.	1540 Mar 22 j 10:16	11° $\mathbb{L}$ 32'43	8.67667 AU	min. Earth dist.	1546 Jun 03 j 10:23	21° $\mathbb{Z}$ 19'14	9.08995 AU
direct	1540 May 31 j 22:40	8° $\mathbb{L}$ 07'03		direct	1546 Aug 13 j 09:33	18° $\mathbb{Z}$ 01'10	
evening set	1540 Sep 14 j 06:06	15° $\mathbb{L}$ 42'36		evening set	1546 Nov 22 j 18:04	25° $\mathbb{Z}$ 01'35	
conjunction	1540 Oct 01 j 08:10	17° $\mathbb{L}$ 46'10	2°16'24	conjunction	1546 Dec 09 j 08:43	26° $\mathbb{Z}$ 57'54	0°52'59
minimum elong	1540 Oct 01 j 08:09	17° $\mathbb{L}$ 46'10	2°16'25	minimum elong	1546 Dec 09 j 08:45	26° $\mathbb{Z}$ 57'55	0°52'59
max. Earth dist.	1540 Oct 01 j 10:14	17° $\mathbb{L}$ 46'48	10.73260 AU	max. Earth dist.	1546 Dec 09 j 03:14	26° $\mathbb{Z}$ 56'18	11.08851 AU
morning rise	1540 Oct 18 j 05:47	19° $\mathbb{L}$ 48'26		morning rise	1546 Dec 25 j 22:45	28° $\mathbb{Z}$ 54'05	
retrograde	1541 Jan 25 j 19:40	27° $\mathbb{L}$ 00'33			1547 Jan 04 j 15:49	0° $\mathbb{Z}$	
opposition	1541 Apr 04 j 04:39	23° $\mathbb{L}$ 41'50	2°47'12	retrograde	1547 Apr 05 j 15:51	5° $\mathbb{Z}$ 52'46	
min. Earth dist.	1541 Apr 04 j 02:36	23° $\mathbb{L}$ 42'13	8.78862 AU	opposition	1547 Jun 15 j 07:36	2° $\mathbb{Z}$ 35'12	0°49'15
direct	1541 Jun 13 j 23:00	20° $\mathbb{L}$ 18'02		min. Earth dist.	1547 Jun 15 j 12:53	2° $\mathbb{Z}$ 34'14	9.08178 AU
evening set	1541 Sep 26 j 16:45	27° $\mathbb{L}$ 45'27			1547 Jul 25 j 19:02	30° $\mathbb{R}$ $\mathbb{Z}$	
conjunction	1541 Oct 13 j 15:13	29° $\mathbb{L}$ 46'43	2°14'31	direct	1547 Aug 25 j 04:03	29° $\mathbb{Z}$ 16'48	
minimum elong	1541 Oct 13 j 15:13	29° $\mathbb{L}$ 46'44	2°14'31		1547 Sep 24 j 02:10	0° $\mathbb{Z}$	
max. Earth dist.	1541 Oct 13 j 16:43	29° $\mathbb{L}$ 47'11	10.83893 AU	evening set	1547 Dec 04 j 00:27	6° $\mathbb{Z}$ 15'50	
	1541 Oct 15 j 11:23	0° $\mathbb{M}$		conjunction	1547 Dec 20 j 15:07	8° $\mathbb{Z}$ 12'23	0°27'20
morning rise	1541 Oct 30 j 09:28	1° $\mathbb{M}$ 46'48		minimum elong	1547 Dec 20 j 15:08	8° $\mathbb{Z}$ 12'23	0°27'19
retrograde	1542 Feb 06 j 20:38	8° $\mathbb{M}$ 53'01		max. Earth dist.	1547 Dec 20 j 08:12	8° $\mathbb{Z}$ 10'21	11.06889 AU
opposition	1542 Apr 16 j 15:59	5° $\mathbb{M}$ 35'11	2°41'03	morning rise	1548 Jan 06 j 06:12	10° $\mathbb{Z}$ 09'05	
min. Earth dist.	1542 Apr 16 j 15:27	5° $\mathbb{M}$ 35'17	8.88833 AU	retrograde	1548 Apr 16 j 12:58	17° $\mathbb{Z}$ 10'59	
direct	1542 Jun 26 j 15:18	2° $\mathbb{M}$ 12'41		opposition	1548 Jun 26 j 09:42	13° $\mathbb{Z}$ 52'36	0°17'01
evening set	1542 Oct 08 j 18:39	9° $\mathbb{M}$ 32'30		min. Earth dist.	1548 Jun 26 j 15:38	13° $\mathbb{Z}$ 51'30	9.05038 AU
conjunction	1542 Oct 25 j 14:07	11° $\mathbb{M}$ 31'52	2°06'57	direct	1548 Sep 05 j 00:04	10° $\mathbb{Z}$ 34'19	
minimum elong	1542 Oct 25 j 14:08	11° $\mathbb{M}$ 31'52	2°06'57	evening set	1548 Dec 14 j 08:00	17° $\mathbb{Z}$ 33'28	
max. Earth dist.	1542 Oct 25 j 13:54	11° $\mathbb{M}$ 31'48	10.93091 AU	conjunction	1548 Dec 30 j 23:08	19° $\mathbb{Z}$ 30'39	0°00'28
morning rise	1542 Nov 11 j 06:00	13° $\mathbb{M}$ 30'14		minimum elong	1548 Dec 30 j 23:09	19° $\mathbb{Z}$ 30'39	0°00'27
	1542 Nov 24 j 09:04	15° $\mathbb{M}$		behind sun begin	1548 Dec 30 j 16:12	19° $\mathbb{Z}$ 28'38	
retrograde	1543 Feb 18 j 16:08	20° $\mathbb{M}$ 31'52		behind sun end	1548 Dec 31 j 06:06	19° $\mathbb{Z}$ 32'41	
opposition	1543 Apr 28 j 23:21	17° $\mathbb{M}$ 14'39	2°28'22	max. Earth dist.	1548 Dec 30 j 16:27	19° $\mathbb{Z}$ 28'42	11.02647 AU
min. Earth dist.	1543 Apr 29 j 00:34	17° $\mathbb{M}$ 14'25	8.97154 AU	desc. node	1549 Jan 06 j 06:35	20° $\mathbb{Z}$ 15'25	
	1543 May 31 j 23:46	15° $\mathbb{R}$ $\mathbb{M}$		morning rise	1549 Jan 16 j 15:26	21° $\mathbb{Z}$ 28'13	
direct	1543 Jul 09 j 03:26	13° $\mathbb{M}$ 53'17		retrograde	1549 Apr 28 j 15:24	28° $\mathbb{Z}$ 34'50	
	1543 Aug 15 j 15:41	15° $\mathbb{M}$		opposition	1549 Jul 08 j 13:44	25° $\mathbb{Z}$ 15'24	0°-16'-10
evening set	1543 Oct 20 j 13:18	21° $\mathbb{M}$ 06'24		min. Earth dist.	1549 Jul 08 j 19:14	25° $\mathbb{Z}$ 14'23	8.99700 AU
conjunction	1543 Nov 06 j 06:31	23° $\mathbb{M}$ 04'19	1°54'19	direct	1549 Sep 16 j 19:38	21° $\mathbb{Z}$ 57'02	
minimum elong	1543 Nov 06 j 06:33	23° $\mathbb{M}$ 04'19	1°54'19	evening set	1549 Dec 25 j 18:28	28° $\mathbb{Z}$ 57'49	
max. Earth dist.	1543 Nov 06 j 04:06	23° $\mathbb{M}$ 03'36	11.00456 AU		1550 Jan 03 j 14:05	0° $\approx$	
morning rise	1543 Nov 22 j 21:02	25° $\mathbb{M}$ 01'26		conjunction	1550 Jan 11 j 10:28	0° $\approx$ 55'58	0°-26'-40
	1544 Jan 11 j 14:54	0° $\mathbb{Z}$		minimum elong	1550 Jan 11 j 10:27	0° $\approx$ 55'58	0°26'42
retrograde	1544 Mar 01 j 09:58	1° $\mathbb{Z}$ 59'56		max. Earth dist.	1550 Jan 11 j 04:23	0° $\approx$ 54'10	10.96287 AU
	1544 Apr 22 j 08:13	30° $\mathbb{R}$ $\mathbb{M}$		morning rise	1550 Jan 28 j 04:12	2° $\approx$ 54'43	
opposition	1544 May 10 j 03:22	28° $\mathbb{M}$ 43'02	2°09'57	retrograde	1550 May 10 j 22:38	10° $\approx$ 07'33	
min. Earth dist.	1544 May 10 j 05:53	28° $\mathbb{M}$ 42'34	9.03448 AU	opposition	1550 Jul 20 j 20:50	6° $\approx$ 46'51	0°-49'-10
direct	1544 Jul 20 j 09:48	25° $\mathbb{M}$ 22'42		min. Earth dist.	1550 Jul 21 j 01:44	6° $\approx$ 45'56	8.92372 AU



direct	1550 Sep 28 j 16:00	3° $\approx$ 28'11		conjunction	1557 Apr 08 j 15:11	28° $\Upsilon$ 08'43	-2°-14'-13
evening set	1551 Jan 06 j 09:27	10° $\approx$ 32'09		minimum elong	1557 Apr 08 j 15:12	28° $\Upsilon$ 08'43	2°14'14
				max. Earth dist.	1557 Apr 08 j 14:32	28° $\Upsilon$ 08'30	10.21416 AU
conjunction	1551 Jan 23 j 02:30	12° $\approx$ 31'36	0°-53'-5		1557 Apr 23 j 03:50	0° $\delta$	
minimum elong	1551 Jan 23 j 02:28	12° $\approx$ 31'36	0°53'06	morning rise	1557 Apr 26 j 06:25	0° $\delta$ 23'30	
max. Earth dist.	1551 Jan 22 j 20:07	12° $\approx$ 29'42	10.88050 AU	retrograde	1557 Aug 11 j 08:51	8° $\delta$ 37'31	
morning rise	1551 Feb 08 j 22:11	14° $\approx$ 31'54		opposition	1557 Oct 18 j 20:52	5° $\delta$ 08'06	-2°-42'-43
	1551 Feb 12 j 22:31	15° $\approx$		min. Earth dist.	1557 Oct 18 j 20:20	5° $\delta$ 08'12	8.16862 AU
retrograde	1551 May 23 j 12:37	21° $\approx$ 52'13		direct	1557 Dec 24 j 10:19	1° $\delta$ 42'54	
opposition	1551 Aug 02 j 07:51	18° $\approx$ 30'10	-1°-20'-46	evening set	1558 Apr 05 j 10:35	9° $\delta$ 39'10	
min. Earth dist.	1551 Aug 02 j 12:54	18° $\approx$ 29'13	8.83318 AU				
direct	1551 Oct 10 j 14:55	15° $\approx$ 10'57		conjunction	1558 Apr 23 j 01:56	11° $\delta$ 55'11	-2°-5'-28
evening set	1552 Jan 18 j 06:37	22° $\approx$ 19'39		minimum elong	1558 Apr 23 j 01:59	11° $\delta$ 55'12	2°05'30
				max. Earth dist.	1558 Apr 23 j 03:03	11° $\delta$ 55'32	10.12524 AU
conjunction	1552 Feb 04 j 01:05	24° $\approx$ 20'43	-1°-17'-42	morning rise	1558 May 10 j 21:31	14° $\delta$ 12'32	
minimum elong	1552 Feb 04 j 01:02	24° $\approx$ 20'42	1°17'42		1558 May 17 j 04:41	15° $\delta$	
max. Earth dist.	1552 Feb 03 j 18:24	24° $\approx$ 18'42	10.78239 AU	retrograde	1558 Aug 25 j 22:27	22° $\delta$ 31'45	
morning rise	1552 Feb 20 j 23:03	26° $\approx$ 22'52		opposition	1558 Nov 01 j 22:07	19° $\delta$ 01'55	-2°-27'-20
	1552 Mar 24 j 19:38	0° $\delta$		min. Earth dist.	1558 Nov 01 j 20:28	19° $\delta$ 02'15	8.08996 AU
retrograde	1552 Jun 04 j 08:00	3° $\delta$ 51'47		direct	1559 Jan 07 j 07:21	15° $\delta$ 35'36	
opposition	1552 Aug 13 j 23:29	0° $\delta$ 28'19	-1°-49'-36	evening set	1559 Apr 20 j 01:31	23° $\delta$ 39'16	
min. Earth dist.	1552 Aug 14 j 04:31	0° $\delta$ 27'21	8.72879 AU				
	1552 Aug 20 j 04:38	30° $\delta$		conjunction	1559 May 07 j 21:40	25° $\delta$ 57'41	-1°-49'-14
direct	1552 Oct 21 j 17:36	27° $\approx$ 08'22		minimum elong	1559 May 07 j 21:43	25° $\delta$ 57'42	1°49'15
	1552 Dec 19 j 18:27	0° $\delta$		max. Earth dist.	1559 May 08 j 01:00	25° $\delta$ 58'46	10.05839 AU
evening set	1553 Jan 29 j 11:09	4° $\delta$ 23'12		morning rise	1559 May 25 j 21:10	28° $\delta$ 17'12	
					1559 Jun 08 j 14:41	0° $\Pi$	
conjunction	1553 Feb 15 j 07:40	6° $\delta$ 26'13	-1°-39'-24	retrograde	1559 Sep 09 j 14:34	6° $\Pi$ 39'00	
minimum elong	1553 Feb 15 j 07:37	6° $\delta$ 26'12	1°39'24	opposition	1559 Nov 16 j 02:46	3° $\Pi$ 09'06	-2°-2'-50
max. Earth dist.	1553 Feb 15 j 01:59	6° $\delta$ 24'28	10.67231 AU	min. Earth dist.	1559 Nov 15 j 23:30	3° $\Pi$ 09'47	8.03560 AU
morning rise	1553 Mar 04 j 08:11	8° $\delta$ 30'28			1560 Jan 03 j 11:55	30° $\delta$	
retrograde	1553 Jun 17 j 11:21	16° $\delta$ 08'52		direct	1560 Jan 21 j 11:19	29° $\delta$ 41'50	
opposition	1553 Aug 26 j 20:40	12° $\delta$ 43'55	-2°-14'-15		1560 Feb 08 j 08:34	0° $\Pi$	
min. Earth dist.	1553 Aug 27 j 00:47	12° $\delta$ 43'08	8.61473 AU	evening set	1560 May 03 j 23:28	7° $\Pi$ 51'19	
direct	1553 Nov 03 j 03:43	9° $\delta$ 23'07					
evening set	1554 Feb 11 j 00:19	16° $\delta$ 45'12		conjunction	1560 May 21 j 23:47	10° $\Pi$ 11'34	-1°-26'-12
				minimum elong	1560 May 21 j 23:51	10° $\Pi$ 11'35	1°26'13
conjunction	1554 Feb 27 j 23:30	18° $\delta$ 50'30	-1°-57'00	max. Earth dist.	1560 May 22 j 05:15	10° $\Pi$ 13'21	10.01799 AU
minimum elong	1554 Feb 27 j 23:28	18° $\delta$ 50'29	1°57'01	morning rise	1560 Jun 09 j 02:20	12° $\Pi$ 32'34	
max. Earth dist.	1554 Feb 27 j 19:37	18° $\delta$ 49'17	10.55482 AU	retrograde	1560 Sep 23 j 06:39	20° $\Pi$ 54'10	
morning rise	1554 Mar 17 j 02:56	20° $\delta$ 57'09		opposition	1560 Nov 29 j 09:12	17° $\Pi$ 24'34	-1°-30'-32
retrograde	1554 Jul 01 j 00:16	28° $\delta$ 45'23		min. Earth dist.	1560 Nov 29 j 04:26	17° $\Pi$ 25'33	8.00921 AU
opposition	1554 Sep 08 j 23:43	25° $\delta$ 19'02	-2°-33'-13	direct	1561 Feb 03 j 20:36	13° $\Pi$ 56'27	
min. Earth dist.	1554 Sep 09 j 02:14	25° $\delta$ 18'32	8.49585 AU	evening set	1561 May 19 j 02:21	22° $\Pi$ 09'51	
direct	1554 Nov 15 j 18:06	21° $\delta$ 57'15					
evening set	1555 Feb 23 j 23:27	29° $\delta$ 27'31		conjunction	1561 Jun 06 j 05:43	24° $\Pi$ 31'09	0°-57'-45
	1555 Feb 28 j 08:43	0° $\Upsilon$		minimum elong	1561 Jun 06 j 05:46	24° $\Pi$ 31'10	0°57'47
				max. Earth dist.	1561 Jun 06 j 12:42	24° $\Pi$ 33'26	10.00673 AU
conjunction	1555 Mar 13 j 01:50	1° $\Upsilon$ 35'20	-2°-9'-20	morning rise	1561 Jun 24 j 10:02	26° $\Pi$ 52'46	
minimum elong	1555 Mar 13 j 01:49	1° $\Upsilon$ 35'19	2°09'21		1561 Jul 20 j 00:04	0° $\delta$	
max. Earth dist.	1555 Mar 12 j 23:03	1° $\Upsilon$ 34'27	10.43524 AU	retrograde	1561 Oct 07 j 20:22	5° $\delta$ 11'21	
morning rise	1555 Mar 30 j 08:43	3° $\Upsilon$ 44'37		opposition	1561 Dec 13 j 15:39	1° $\delta$ 42'22	0°-52'-32
retrograde	1555 Jul 14 j 20:58	11° $\Upsilon$ 42'27		min. Earth dist.	1561 Dec 13 j 10:00	1° $\delta$ 43'33	8.01243 AU
opposition	1555 Sep 22 j 08:46	8° $\Upsilon$ 14'50	-2°-45'-3		1562 Jan 04 j 05:14	30° $\delta$	
min. Earth dist.	1555 Sep 22 j 10:02	8° $\Upsilon$ 14'35	8.37773 AU	direct	1562 Feb 18 j 08:20	28° $\Pi$ 13'36	
direct	1555 Nov 28 j 14:47	4° $\Upsilon$ 51'57			1562 Apr 03 j 21:10	0° $\delta$	
evening set	1556 Mar 08 j 08:55	12° $\Upsilon$ 31'01		evening set	1562 Jun 03 j 07:14	6° $\delta$ 28'46	
conjunction	1556 Mar 25 j 15:04	14° $\Upsilon$ 41'31	-2°-15'-21	conjunction	1562 Jun 21 j 12:03	8° $\delta$ 50'09	0°-25'-46
minimum elong	1556 Mar 25 j 15:04	14° $\Upsilon$ 41'31	2°15'22	minimum elong	1562 Jun 21 j 12:05	8° $\delta$ 50'10	0°25'48
max. Earth dist.	1556 Mar 25 j 13:10	14° $\Upsilon$ 40'55	10.31956 AU	max. Earth dist.	1562 Jun 21 j 19:37	8° $\delta$ 52'37	10.02494 AU
morning rise	1556 Apr 12 j 01:56	16° $\Upsilon$ 53'33		morning rise	1562 Jul 09 j 16:29	11° $\delta$ 11'25	
retrograde	1556 Jul 27 j 23:52	25° $\Upsilon$ 00'13		retrograde	1562 Oct 22 j 06:32	19° $\delta$ 24'35	
opposition	1556 Oct 05 j 00:02	21° $\Upsilon$ 31'33	-2°-48'-31	opposition	1562 Dec 27 j 20:36	15° $\delta$ 56'30	0°-11'-28
min. Earth dist.	1556 Oct 05 j 00:23	21° $\Upsilon$ 31'29	8.26654 AU	min. Earth dist.	1562 Dec 27 j 14:58	15° $\delta$ 57'40	8.04443 AU
direct	1556 Dec 10 j 20:46	18° $\Upsilon$ 07'31		direct	1563 Mar 04 j 21:38	12° $\delta$ 27'18	
evening set	1557 Mar 22 j 04:39	25° $\Upsilon$ 55'24		asc. node	1563 Apr 11 j 07:45	13° $\delta$ 42'30	



evening set	1563 Jun 18 j 10:51	20° <del>5</del> 42'00		morning rise	1568 Sep 30 j 12:13	2° <del>5</del> 18'29	
				retrograde	1569 Jan 08 j 13:51	9° <del>5</del> 41'30	
conjunction	1563 Jul 06 j 15:15	23° <del>5</del> 02'31	0°07'38	opposition	1569 Mar 17 j 06:50	6° <del>5</del> 21'04	2°43'13
minimum elong	1563 Jul 06 j 15:15	23° <del>5</del> 02'31	0°07'38	min. Earth dist.	1569 Mar 17 j 04:49	6° <del>5</del> 21'28	8.61670 AU
behind sun begin	1563 Jul 06 j 08:37	23° <del>5</del> 00'23		direct	1569 May 26 j 10:44	2° <del>5</del> 55'11	
behind sun end	1563 Jul 06 j 21:54	23° <del>5</del> 04'39		evening set	1569 Sep 09 j 01:22	10° <del>5</del> 34'53	
max. Earth dist.	1563 Jul 06 j 22:17	23° <del>5</del> 04'47	10.07039 AU				
morning rise	1563 Jul 24 j 18:03	25° <del>5</del> 22'31		conjunction	1569 Sep 26 j 05:22	12° <del>5</del> 39'46	2°15'18
	1563 Sep 02 j 17:19	0° <del>0</del>		minimum elong	1569 Sep 26 j 05:21	12° <del>5</del> 39'45	2°15'18
retrograde	1563 Nov 05 j 10:38	3° <del>0</del> 28'29		max. Earth dist.	1569 Sep 26 j 07:06	12° <del>5</del> 40'17	10.67223 AU
opposition	1564 Jan 10 j 22:31	0° <del>0</del> 01'32	0°29'50	morning rise	1569 Oct 13 j 04:45	14° <del>5</del> 43'16	
min. Earth dist.	1564 Jan 10 j 17:39	0° <del>0</del> 02'32	8.10198 AU	retrograde	1570 Jan 20 j 21:34	21° <del>5</del> 58'49	
	1564 Jan 11 j 06:00	30° <del>0</del> 39'		opposition	1570 Mar 30 j 01:25	18° <del>5</del> 39'24	2°47'42
direct	1564 Mar 18 j 10:30	26° <del>5</del> 32'12		min. Earth dist.	1570 Mar 30 j 00:47	18° <del>5</del> 39'32	8.72852 AU
	1564 May 22 j 00:45	0° <del>0</del>		direct	1570 Jun 08 j 15:12	15° <del>5</del> 14'39	
evening set	1564 Jul 02 j 10:29	4° <del>0</del> 44'32		evening set	1570 Sep 21 j 16:37	22° <del>5</del> 46'09	
conjunction	1564 Jul 20 j 12:48	7° <del>0</del> 03'21	0°40'06	conjunction	1570 Oct 08 j 16:34	24° <del>5</del> 48'33	2°16'05
minimum elong	1564 Jul 20 j 12:46	7° <del>0</del> 03'20	0°40'06	minimum elong	1570 Oct 08 j 16:34	24° <del>5</del> 48'33	2°16'05
max. Earth dist.	1564 Jul 20 j 18:33	7° <del>0</del> 05'12	10.13908 AU	max. Earth dist.	1570 Oct 08 j 16:34	24° <del>5</del> 48'33	10.77977 AU
morning rise	1564 Aug 07 j 12:28	9° <del>0</del> 21'18		morning rise	1570 Oct 25 j 12:25	26° <del>5</del> 49'42	
	1564 Sep 28 j 00:31	15° <del>0</del>			1570 Nov 23 j 01:30	0° <del>0</del>	
retrograde	1564 Nov 18 j 07:17	17° <del>0</del> 19'02		retrograde	1571 Feb 01 j 23:07	3° <del>0</del> 58'51	
	1565 Jan 09 j 23:07	15° <del>0</del> 39'		opposition	1571 Apr 11 j 15:00	0° <del>0</del> 40'15	2°44'40
opposition	1565 Jan 23 j 20:16	13° <del>0</del> 53'25	1°08'41	min. Earth dist.	1571 Apr 11 j 14:54	0° <del>0</del> 40'16	8.83092 AU
min. Earth dist.	1565 Jan 23 j 16:02	13° <del>0</del> 54'17	8.18081 AU		1571 Apr 20 j 12:37	30° <del>0</del> 39'	
direct	1565 Apr 01 j 21:40	10° <del>0</del> 24'17		direct	1571 Jun 21 j 12:49	27° <del>5</del> 16'40	
	1565 Jun 17 j 00:10	15° <del>0</del>			1571 Aug 20 j 02:18	0° <del>0</del>	
evening set	1565 Jul 17 j 03:43	18° <del>0</del> 32'33		evening set	1571 Oct 03 j 22:18	4° <del>0</del> 40'18	
conjunction	1565 Aug 04 j 02:35	20° <del>0</del> 49'01	1°09'46	conjunction	1571 Oct 20 j 19:05	6° <del>0</del> 40'37	2°10'57
minimum elong	1565 Aug 04 j 02:32	20° <del>0</del> 49'00	1°09'47	minimum elong	1571 Oct 20 j 19:06	6° <del>0</del> 40'38	2°10'56
max. Earth dist.	1565 Aug 04 j 07:17	20° <del>0</del> 50'31	10.22682 AU	max. Earth dist.	1571 Oct 20 j 18:23	6° <del>0</del> 40'25	10.87584 AU
morning rise	1565 Aug 21 j 21:56	23° <del>0</del> 04'20		morning rise	1571 Nov 06 j 12:11	8° <del>0</del> 39'53	
	1565 Oct 31 j 14:55	0° <del>0</del> 39'			1572 Jan 15 j 12:40	15° <del>0</del>	
retrograde	1565 Dec 01 j 19:14	0° <del>0</del> 53'19		retrograde	1572 Feb 13 j 21:14	15° <del>0</del> 43'54	
	1566 Jan 02 j 08:51	30° <del>0</del> 39'			1572 Mar 14 j 18:51	15° <del>0</del> 39'	
opposition	1566 Feb 06 j 13:14	27° <del>0</del> 29'05	1°42'49	opposition	1572 Apr 23 j 00:05	12° <del>0</del> 25'52	2°34'45
min. Earth dist.	1566 Feb 06 j 09:15	27° <del>0</del> 29'54	8.27676 AU	min. Earth dist.	1572 Apr 23 j 00:16	12° <del>0</del> 25'50	8.91964 AU
direct	1566 Apr 16 j 04:51	24° <del>0</del> 00'28		direct	1572 Jul 03 j 04:13	9° <del>0</del> 03'27	
	1566 Jul 14 j 10:27	0° <del>0</del> 39'			1572 Oct 03 j 03:39	15° <del>0</del>	
evening set	1566 Jul 31 j 12:35	2° <del>0</del> 03'06		evening set	1572 Oct 14 j 20:07	16° <del>0</del> 19'56	
conjunction	1566 Aug 18 j 07:01	4° <del>0</del> 16'45	1°35'02	conjunction	1572 Oct 31 j 14:31	18° <del>0</del> 18'38	2°00'27
minimum elong	1566 Aug 18 j 06:58	4° <del>0</del> 16'44	1°35'02	minimum elong	1572 Oct 31 j 14:33	18° <del>0</del> 18'39	2°00'26
max. Earth dist.	1566 Aug 18 j 11:07	4° <del>0</del> 18'03	10.32933 AU	max. Earth dist.	1572 Oct 31 j 13:33	18° <del>0</del> 18'21	10.95654 AU
morning rise	1566 Sep 04 j 21:14	6° <del>0</del> 29'04		morning rise	1572 Nov 17 j 05:36	20° <del>0</del> 16'26	
retrograde	1566 Dec 15 j 01:01	14° <del>0</del> 09'07		retrograde	1573 Feb 24 j 17:19	27° <del>0</del> 16'37	
opposition	1567 Feb 20 j 00:49	10° <del>0</del> 46'15	2°10'34	opposition	1573 May 05 j 05:32	23° <del>0</del> 59'02	2°18'44
min. Earth dist.	1567 Feb 19 j 20:48	10° <del>0</del> 47'03	8.38511 AU	min. Earth dist.	1573 May 05 j 06:39	23° <del>0</del> 58'49	8.99131 AU
direct	1567 Apr 30 j 05:25	7° <del>0</del> 18'23		direct	1573 Jul 15 j 11:30	20° <del>0</del> 37'42	
evening set	1567 Aug 14 j 11:33	15° <del>0</del> 14'04		evening set	1573 Oct 26 j 11:34	27° <del>0</del> 48'02	
conjunction	1567 Sep 01 j 01:07	17° <del>0</del> 24'44	1°54'43	conjunction	1573 Nov 12 j 04:08	29° <del>0</del> 45'33	1°45'15
minimum elong	1567 Sep 01 j 01:04	17° <del>0</del> 24'43	1°54'44	minimum elong	1573 Nov 12 j 04:11	29° <del>0</del> 45'33	1°45'14
max. Earth dist.	1567 Sep 01 j 05:05	17° <del>0</del> 25'58	10.44155 AU	max. Earth dist.	1573 Nov 12 j 02:07	29° <del>0</del> 44'57	11.01893 AU
morning rise	1567 Sep 18 j 09:57	19° <del>0</del> 33'57			1573 Nov 14 j 05:03	0° <del>0</del> 39'	
retrograde	1567 Dec 27 j 23:35	27° <del>0</del> 05'13		morning rise	1573 Nov 28 j 18:08	1° <del>0</del> 34'21	
opposition	1568 Mar 04 j 06:41	23° <del>0</del> 43'37	2°30'51	retrograde	1574 Mar 08 j 09:38	8° <del>0</del> 34'01	
min. Earth dist.	1568 Mar 04 j 03:20	23° <del>0</del> 44'17	8.50039 AU	opposition	1574 May 17 j 08:37	5° <del>0</del> 32'24	1°57'28
direct	1568 May 12 j 23:07	20° <del>0</del> 16'42		min. Earth dist.	1574 May 17 j 11:12	5° <del>0</del> 32'20	9.04345 AU
evening set	1568 Aug 26 j 23:45	28° <del>0</del> 04'35		direct	1574 Jul 27 j 14:29	2° <del>0</del> 30'28	
	1568 Sep 11 j 16:44	0° <del>0</del> 39'		evening set	1574 Nov 06 j 22:05	9° <del>0</del> 30'75	
conjunction	1568 Sep 13 j 08:27	0° <del>0</del> 12'16	2°08'13	conjunction	1574 Nov 23 j 13:24	11° <del>0</del> 30'43	1°26'03
minimum elong	1568 Sep 13 j 08:25	0° <del>0</del> 12'15	2°08'14	minimum elong	1574 Nov 23 j 13:27	11° <del>0</del> 30'43	1°26'03
max. Earth dist.	1568 Sep 13 j 11:45	0° <del>0</del> 13'17	10.55777 AU	max. Earth dist.	1574 Nov 23 j 09:41	11° <del>0</del> 30'32	11.06086 AU



morning rise	1574 Dec 10 j 03:09	13° $\mathcal{A}$ 00'49		direct	1580 Oct 04 j 17:42	10° $\approx$ 15'01	
retrograde	1575 Mar 20 j 02:44	19° $\mathcal{A}$ 57'52			1580 Dec 22 j 15:02	15° $\approx$	
opposition	1575 May 29 j 10:00	16° $\mathcal{A}$ 40'28	1°31'50	evening set	1581 Jan 12 j 09:03	17° $\approx$ 20'37	
min. Earth dist.	1575 May 29 j 13:16	16° $\mathcal{A}$ 39'52	9.07423 AU				
direct	1575 Aug 08 j 14:54	13° $\mathcal{A}$ 20'58		conjunction	1581 Jan 29 j 02:48	19° $\approx$ 20'39	-1°-7'00
evening set	1575 Nov 18 j 05:33	20° $\mathcal{A}$ 22'40		minimum elong	1581 Jan 29 j 02:45	19° $\approx$ 20'38	1°07'01
				max. Earth dist.	1581 Jan 28 j 22:32	19° $\approx$ 19'22	10.85231 AU
conjunction	1575 Dec 04 j 20:21	22° $\mathcal{A}$ 19'03	1°03'37	morning rise	1581 Feb 14 j 23:25	21° $\approx$ 21'37	
minimum elong	1575 Dec 04 j 20:23	22° $\mathcal{A}$ 19'03	1°03'38	retrograde	1581 May 29 j 23:54	28° $\approx$ 45'32	
max. Earth dist.	1575 Dec 04 j 16:14	22° $\mathcal{A}$ 17'50	11.08079 AU	opposition	1581 Aug 08 j 17:18	25° $\approx$ 23'22	-1°-37'-4
morning rise	1575 Dec 21 j 10:17	24° $\mathcal{A}$ 15'12		min. Earth dist.	1581 Aug 08 j 20:33	25° $\approx$ 22'46	8.80415 AU
	1576 Feb 20 j 22:18	0° $\mathcal{B}$		direct	1581 Oct 16 j 17:45	22° $\approx$ 04'31	
retrograde	1576 Mar 30 j 20:06	1° $\mathcal{B}$ 12'58		evening set	1582 Jan 24 j 09:35	29° $\approx$ 15'18	
	1576 May 09 j 19:53	30° $\mathcal{R}$ $\mathcal{A}$			1582 Jan 30 j 14:49	0° $\mathcal{H}$	
opposition	1576 Jun 09 j 10:31	27° $\mathcal{A}$ 55'19	1°02'48	conjunction	1582 Feb 10 j 05:00	1° $\mathcal{H}$ 17'03	-1°-30'-4
min. Earth dist.	1576 Jun 09 j 13:47	27° $\mathcal{A}$ 54'43	9.08248 AU	minimum elong	1582 Feb 10 j 04:57	1° $\mathcal{H}$ 17'03	1°30'05
direct	1576 Aug 19 j 10:54	24° $\mathcal{A}$ 36'30		max. Earth dist.	1582 Feb 10 j 00:39	1° $\mathcal{H}$ 15'44	10.75239 AU
	1576 Nov 14 j 05:13	0° $\mathcal{B}$		morning rise	1582 Feb 27 j 03:59	3° $\mathcal{H}$ 19'57	
evening set	1576 Nov 28 j 11:44	1° $\mathcal{B}$ 35'58		retrograde	1582 Jun 11 j 23:37	10° $\mathcal{H}$ 52'40	
conjunction	1576 Dec 15 j 02:29	3° $\mathcal{B}$ 32'23	0°38'46	opposition	1582 Aug 21 j 11:11	7° $\mathcal{H}$ 29'08	-2°-3'-38
minimum elong	1576 Dec 15 j 02:30	3° $\mathcal{B}$ 32'23	0°38'47	min. Earth dist.	1582 Aug 21 j 14:20	7° $\mathcal{H}$ 28'32	8.69847 AU
max. Earth dist.	1576 Dec 14 j 22:33	3° $\mathcal{B}$ 31'14	11.07787 AU	direct	1582 Nov 07 23:08	4° $\mathcal{H}$ 09'32	
morning rise	1576 Dec 31 j 16:58	5° $\mathcal{B}$ 28'47		evening set	1583 Feb 15 18:06	11° $\mathcal{H}$ 26'48	
retrograde	1577 Apr 11 j 17:20	12° $\mathcal{B}$ 28'54					
opposition	1577 Jun 21 j 11:44	9° $\mathcal{B}$ 10'46	0°31'20	conjunction	1583 Mar 04 15:41	13° $\mathcal{H}$ 30'36	-1°-49'-34
min. Earth dist.	1577 Jun 21 j 15:04	9° $\mathcal{B}$ 10'09	9.06789 AU	minimum elong	1583 Mar 04 15:39	13° $\mathcal{H}$ 30'35	1°49'35
direct	1577 Aug 31 j 06:13	5° $\mathcal{B}$ 52'25		max. Earth dist.	1583 Mar 04 10:52	13° $\mathcal{H}$ 29'07	10.64129 AU
evening set	1577 Dec 09 j 18:15	12° $\mathcal{B}$ 51'07		morning rise	1583 Mar 21 17:35	15° $\mathcal{H}$ 35'43	
				retrograde	1583 Jul 05 07:13	23° $\mathcal{H}$ 17'49	
conjunction	1577 Dec 26 j 09:09	14° $\mathcal{B}$ 47'56	0°12'23	opposition	1583 Sep 13 10:38	19° $\mathcal{H}$ 52'54	-2°-25'-12
minimum elong	1577 Dec 26 j 09:10	14° $\mathcal{B}$ 47'56	0°12'22	min. Earth dist.	1583 Sep 13 14:02	19° $\mathcal{H}$ 52'15	8.58349 AU
behind sun begin	1577 Dec 26 j 04:29	14° $\mathcal{B}$ 46'34		direct	1583 Nov 20 09:56	16° $\mathcal{H}$ 32'20	
behind sun end	1577 Dec 26 j 13:50	14° $\mathcal{B}$ 49'17		evening set	1584 Feb 28 11:40	23° $\mathcal{H}$ 57'14	
max. Earth dist.	1577 Dec 26 j 04:30	14° $\mathcal{B}$ 46'34	11.05225 AU				
morning rise	1578 Jan 12 j 00:44	16° $\mathcal{B}$ 44'59		conjunction	1584 Mar 16 12:07	26° $\mathcal{H}$ 03'23	-2°-4'-21
retrograde	1578 Apr 23 j 17:42	23° $\mathcal{B}$ 48'57		minimum elong	1584 Mar 16 12:05	26° $\mathcal{H}$ 03'22	2°04'22
desc. node	1578 Jun 16 j 06:05	21° $\mathcal{B}$ 44'59		max. Earth dist.	1584 Mar 16 07:37	26° $\mathcal{H}$ 01'59	10.52303 AU
opposition	1578 Jul 03 j 14:35	20° $\mathcal{B}$ 30'06	0°-1'-31	morning rise	1584 Apr 02 17:14	28° $\mathcal{H}$ 10'58	
min. Earth dist.	1578 Jul 03 j 18:45	20° $\mathcal{B}$ 29'21	9.03110 AU		1584 Apr 18 00:34	0° $\mathcal{Y}$	
direct	1578 Sep 11 j 23:31	17° $\mathcal{B}$ 12'00		retrograde	1584 Jul 17 21:44	6° $\mathcal{Y}$ 02'44	
evening set	1578 Dec 21 j 03:00	24° $\mathcal{B}$ 11'29		opposition	1584 Sep 25 15:56	2° $\mathcal{Y}$ 36'28	-2°-40'-21
				min. Earth dist.	1584 Sep 25 19:03	2° $\mathcal{Y}$ 35'51	8.46398 AU
conjunction	1579 Jan 06 j 18:23	26° $\mathcal{B}$ 09'01	0°-14'-45		1584 Nov 02 18:38	30° $\mathcal{R}$ $\mathcal{H}$	
minimum elong	1579 Jan 06 j 18:23	26° $\mathcal{B}$ 09'01	0°14'47	direct	1584 Dec 02 04:01	29° $\mathcal{H}$ 14'47	
behind sun begin	1579 Jan 06 j 15:22	26° $\mathcal{B}$ 08'08			1584 Dec 31 03:06	0° $\mathcal{Y}$	
behind sun end	1579 Jan 06 j 21:24	26° $\mathcal{B}$ 09'54		evening set	1585 Mar 12 15:07	6° $\mathcal{Y}$ 48'10	
max. Earth dist.	1579 Jan 06 j 12:51	26° $\mathcal{B}$ 07'23	11.00494 AU				
morning rise	1579 Jan 23 j 11:30	28° $\mathcal{B}$ 07'04		conjunction	1585 Mar 29 19:13	8° $\mathcal{Y}$ 56'57	-2°-13'-19
	1579 Feb 09 j 05:13	0° $\approx$		minimum elong	1585 Mar 29 19:12	8° $\mathcal{Y}$ 56'57	2°13'20
retrograde	1579 May 05 j 20:10	5° $\approx$ 16'22		max. Earth dist.	1585 Mar 29 16:13	8° $\mathcal{Y}$ 56'00	10.40338 AU
opposition	1579 Jul 15 j 19:47	1° $\approx$ 56'36	0°-34'-40	morning rise	1585 Apr 16 03:59	11° $\mathcal{Y}$ 07'13	
min. Earth dist.	1579 Jul 16 j 00:25	1° $\approx$ 55'45	8.97347 AU	retrograde	1585 Jul 31 19:46	19° $\mathcal{Y}$ 08'16	
	1579 Aug 12 j 19:59	30° $\mathcal{R}$ $\mathcal{B}$		opposition	1585 Oct 09 03:18	15° $\mathcal{Y}$ 40'44	-2°-47'-45
direct	1579 Sep 23 j 18:57	28° $\mathcal{B}$ 38'28		min. Earth dist.	1585 Oct 09 05:05	15° $\mathcal{Y}$ 40'22	8.34647 AU
	1579 Nov 03 j 13:13	0° $\approx$		direct	1585 Dec 15 05:58	12° $\mathcal{Y}$ 17'49	
evening set	1580 Jan 01 j 15:24	5° $\approx$ 40'17		evening set	1586 Mar 26 04:54	20° $\mathcal{Y}$ 00'01	
conjunction	1580 Jan 18 j 07:48	7° $\approx$ 38'55	0°-41'-32	conjunction	1586 Apr 12 13:16	22° $\mathcal{Y}$ 11'36	-2°-15'-32
minimum elong	1580 Jan 18 j 07:46	7° $\approx$ 38'54	0°41'33	minimum elong	1586 Apr 12 13:17	22° $\mathcal{Y}$ 11'36	2°15'34
max. Earth dist.	1580 Jan 18 j 02:33	7° $\approx$ 37'21	10.93754 AU	max. Earth dist.	1586 Apr 12 11:57	22° $\mathcal{Y}$ 11'10	10.28927 AU
morning rise	1580 Feb 04 j 02:34	9° $\approx$ 38'16		morning rise	1586 Apr 30 02:08	24° $\mathcal{Y}$ 24'39	
	1580 Mar 29 j 00:00	15° $\approx$			1586 Jun 20 07:06	0° $\mathcal{B}$	
retrograde	1580 May 17 j 06:51	16° $\approx$ 54'17		retrograde	1586 Aug 15 01:37	2° $\mathcal{B}$ 33'51	
	1580 Jul 07 j 04:44	15° $\mathcal{R}$ $\approx$			1586 Oct 11 08:46	30° $\mathcal{R}$ $\mathcal{Y}$	
opposition	1580 Jul 27 j 04:23	13° $\approx$ 33'24	-1°-6'-57	opposition	1586 Oct 22 20:23	29° $\mathcal{Y}$ 05'14	-2°-46'-20
min. Earth dist.	1580 Jul 27 j 08:31	13° $\approx$ 32'37	8.89693 AU	min. Earth dist.	1586 Oct 22 20:40	29° $\mathcal{Y}$ 05'10	8.23781 AU



direct	1586 Dec 28 14:03	25° $\Upsilon$ 41'01		asc. node	1592 Oct 13 01:23	26° $\Theta$ 24'11	
	1587 Mar 10 08:11	0° $\mathcal{B}$		retrograde	1592 Nov 08 01:16	27° $\Theta$ 01'50	
evening set	1587 Apr 09 05:05	3° $\mathcal{B}$ 31'52		opposition	1593 Jan 13 15:10	23° $\Theta$ 33'47	0°10'08
				min. Earth dist.	1593 Jan 13 10:04	23° $\Theta$ 34'50	8.06140 AU
conjunction	1587 Apr 26 18:04	5° $\mathcal{B}$ 46'15	-2°-10'-23	direct	1593 Mar 21 23:18	20° $\Theta$ 03'58	
minimum elong	1587 Apr 26 18:05	5° $\mathcal{B}$ 46'15	2°10'24	evening set	1593 Jul 05 16:18	28° $\Theta$ 17'47	
max. Earth dist.	1587 Apr 26 18:07	5° $\mathcal{B}$ 46'16	10.18751 AU		1593 Jul 18 23:34	0° $\mathcal{Q}$	
morning rise	1587 May 14 11:14	8° $\mathcal{B}$ 02'01					
	1587 Jul 21 21:12	15° $\mathcal{B}$		conjunction	1593 Jul 23 20:04	0° $\mathcal{Q}$ 37'39	0°24'42
retrograde	1587 Aug 29 12:56	16° $\mathcal{B}$ 17'33		minimum elong	1593 Jul 23 20:03	0° $\mathcal{Q}$ 37'38	0°24'42
	1587 Oct 07 10:46	15° $\mathcal{R}$ $\mathcal{B}$		max. Earth dist.	1593 Jul 24 02:37	0° $\mathcal{Q}$ 39'45	10.09189 AU
opposition	1587 Nov 05 18:23	12° $\mathcal{B}$ 48'08	-2°-35'-30	morning rise	1593 Aug 10 21:31	2° $\mathcal{Q}$ 56'48	
min. Earth dist.	1587 Nov 05 17:26	12° $\mathcal{B}$ 48'20	8.14455 AU	retrograde	1593 Nov 22 01:30	10° $\mathcal{Q}$ 58'54	
direct	1588 Jan 11 05:48	9° $\mathcal{B}$ 22'35		opposition	1594 Jan 27 14:47	7° $\mathcal{Q}$ 32'04	0°50'28
	1588 Apr 03 09:06	15° $\mathcal{B}$		min. Earth dist.	1594 Jan 27 09:33	7° $\mathcal{Q}$ 33'08	8.12810 AU
evening set	1588 Apr 22 14:38	17° $\mathcal{B}$ 21'27		direct	1594 Apr 05 10:43	4° $\mathcal{Q}$ 02'16	
				evening set	1594 Jul 20 12:50	12° $\mathcal{Q}$ 12'56	
conjunction	1588 May 10 08:21	19° $\mathcal{B}$ 38'25	-1°-57'-40				
minimum elong	1588 May 10 08:24	19° $\mathcal{B}$ 38'26	1°57'42	conjunction	1594 Aug 07 13:46	14° $\mathcal{Q}$ 30'45	0°55'57
max. Earth dist.	1588 May 10 09:26	19° $\mathcal{B}$ 38'46	10.10438 AU	minimum elong	1594 Aug 07 13:44	14° $\mathcal{Q}$ 30'44	0°55'57
morning rise	1588 May 28 05:47	21° $\mathcal{B}$ 56'37		max. Earth dist.	1594 Aug 07 20:15	14° $\mathcal{Q}$ 32'49	10.16995 AU
	1588 Aug 25 20:01	0° $\mathcal{I}$			1594 Aug 11 09:00	15° $\mathcal{Q}$	
retrograde	1588 Sep 12 02:59	0° $\mathcal{I}$ 16'11		morning rise	1594 Aug 25 11:18	16° $\mathcal{Q}$ 47'31	
	1588 Sep 29 08:24	30° $\mathcal{R}$ $\mathcal{B}$		retrograde	1594 Dec 05 18:34	24° $\mathcal{Q}$ 41'06	
opposition	1588 Nov 18 20:30	26° $\mathcal{B}$ 46'19	-2°-15'-18	opposition	1595 Feb 10 10:08	21° $\mathcal{Q}$ 15'38	1°27'06
min. Earth dist.	1588 Nov 18 18:49	26° $\mathcal{B}$ 46'40	8.07253 AU	min. Earth dist.	1595 Feb 10 05:21	21° $\mathcal{Q}$ 16'36	8.21650 AU
direct	1589 Jan 24 05:29	23° $\mathcal{B}$ 19'29		direct	1595 Apr 19 18:16	17° $\mathcal{Q}$ 46'13	
	1589 Apr 26 00:17	0° $\mathcal{I}$		evening set	1595 Aug 04 01:43	25° $\mathcal{Q}$ 51'55	
evening set	1589 May 07 08:08	1° $\mathcal{I}$ 25'08					
conjunction	1589 May 25 06:19	3° $\mathcal{I}$ 44'18	-1°-37'-48	conjunction	1595 Aug 21 22:31	28° $\mathcal{Q}$ 07'06	1°23'29
minimum elong	1589 May 25 06:23	3° $\mathcal{I}$ 44'19	1°37'50	minimum elong	1595 Aug 21 22:28	28° $\mathcal{Q}$ 07'05	1°23'29
max. Earth dist.	1589 May 25 08:31	3° $\mathcal{I}$ 45'01	10.04508 AU	max. Earth dist.	1595 Aug 22 04:18	28° $\mathcal{Q}$ 08'56	10.26701 AU
morning rise	1589 Jun 12 07:29	6° $\mathcal{I}$ 04'25			1595 Sep 05 19:51	0° $\mathcal{P}$	
retrograde	1589 Sep 26 17:49	14° $\mathcal{I}$ 25'20		morning rise	1595 Sep 08 15:14	0° $\mathcal{P}$ 21'00	
opposition	1589 Dec 03 01:14	10° $\mathcal{I}$ 55'25	-1°-46'-38	retrograde	1595 Dec 19 04:19	8° $\mathcal{P}$ 05'37	
min. Earth dist.	1589 Dec 02 22:56	10° $\mathcal{I}$ 55'53	8.02627 AU	opposition	1596 Feb 24 00:19	4° $\mathcal{P}$ 41'37	1°58'05
direct	1590 Feb 07 11:40	7° $\mathcal{I}$ 27'26		min. Earth dist.	1596 Feb 23 20:16	4° $\mathcal{P}$ 42'26	8.32130 AU
evening set	1590 May 22 07:51	15° $\mathcal{I}$ 38'15		direct	1596 May 02 21:22	1° $\mathcal{P}$ 12'55	
				evening set	1596 Aug 17 05:29	9° $\mathcal{P}$ 12'15	
conjunction	1590 Jun 09 09:43	17° $\mathcal{I}$ 58'57	-1°-11'-50	conjunction	1596 Sep 03 21:27	11° $\mathcal{P}$ 24'29	1°45'57
minimum elong	1590 Jun 09 09:47	17° $\mathcal{I}$ 58'58	1°11'51	minimum elong	1596 Sep 03 21:24	11° $\mathcal{P}$ 24'28	1°45'57
max. Earth dist.	1590 Jun 09 13:07	18° $\mathcal{I}$ 00'03	10.01323 AU	max. Earth dist.	1596 Sep 04 01:57	11° $\mathcal{P}$ 25'54	10.37747 AU
morning rise	1590 Jun 27 13:27	20° $\mathcal{I}$ 20'13		morning rise	1596 Sep 21 09:01	13° $\mathcal{P}$ 35'18	
retrograde	1590 Oct 11 07:20	28° $\mathcal{I}$ 39'45		retrograde	1596 Dec 31 04:54	21° $\mathcal{P}$ 10'56	
opposition	1590 Dec 17 06:52	25° $\mathcal{I}$ 10'09	-1°-11'-12	opposition	1597 Mar 08 08:43	17° $\mathcal{P}$ 48'25	2°22'01
min. Earth dist.	1590 Dec 17 03:45	25° $\mathcal{I}$ 10'47	8.00862 AU	min. Earth dist.	1597 Mar 08 05:17	17° $\mathcal{P}$ 49'06	8.43654 AU
direct	1591 Feb 21 21:40	21° $\mathcal{I}$ 41'15		direct	1597 May 16 19:24	14° $\mathcal{P}$ 20'42	
evening set	1591 Jun 06 11:04	29° $\mathcal{I}$ 55'14		evening set	1597 Aug 30 22:59	22° $\mathcal{P}$ 12'40	
	1591 Jun 07 02:00	0° $\mathcal{\Theta}$					
conjunction	1591 Jun 24 15:18	2° $\mathcal{\Theta}$ 16'37	0°-41'-22	conjunction	1597 Sep 17 09:58	24° $\mathcal{P}$ 21'50	2°02'27
minimum elong	1591 Jun 24 15:20	2° $\mathcal{\Theta}$ 16'38	0°41'23	minimum elong	1597 Sep 17 09:55	24° $\mathcal{P}$ 21'50	2°02'28
max. Earth dist.	1591 Jun 24 19:53	2° $\mathcal{\Theta}$ 18'07	10.01075 AU	max. Earth dist.	1597 Sep 17 13:17	24° $\mathcal{P}$ 22'52	10.49525 AU
morning rise	1591 Jul 12 20:01	4° $\mathcal{\Theta}$ 38'08		morning rise	1597 Oct 04 16:22	26° $\mathcal{P}$ 29'35	
retrograde	1591 Oct 25 18:43	12° $\mathcal{\Theta}$ 53'47			1597 Nov 04 13:21	0° $\mathcal{\Delta}$	
opposition	1591 Dec 31 12:05	9° $\mathcal{\Theta}$ 24'49	0°-31'-21	retrograde	1598 Jan 12 22:00	3° $\mathcal{\Delta}$ 56'42	
min. Earth dist.	1591 Dec 31 07:56	9° $\mathcal{\Theta}$ 25'40	8.02065 AU	opposition	1598 Mar 21 11:33	0° $\mathcal{\Delta}$ 35'34	2°38'11
direct	1592 Mar 07 10:16	5° $\mathcal{\Theta}$ 55'17		min. Earth dist.	1598 Mar 21 08:16	0° $\mathcal{\Delta}$ 36'13	8.55597 AU
evening set	1592 Jun 20 14:44	14° $\mathcal{\Theta}$ 10'16			1598 Mar 29 02:26	30° $\mathcal{R}$ $\mathcal{P}$	
				direct	1598 May 30 11:10	27° $\mathcal{P}$ 09'04	
conjunction	1592 Jul 08 19:37	16° $\mathcal{\Theta}$ 31'22	0°-8'-29		1598 Jul 29 15:05	0° $\mathcal{\Delta}$	
minimum elong	1592 Jul 08 19:38	16° $\mathcal{\Theta}$ 31'22	0°08'30	evening set	1598 Sep 13 05:42	4° $\mathcal{\Delta}$ 53'00	
behind sun begin	1592 Jul 08 13:15	16° $\mathcal{\Theta}$ 29'18					
behind sun end	1592 Jul 09 02:02	16° $\mathcal{\Theta}$ 33'25		conjunction	1598 Sep 30 11:56	6° $\mathcal{\Delta}$ 59'15	2°12'36
max. Earth dist.	1592 Jul 09 01:25	16° $\mathcal{\Theta}$ 33'13	10.03762 AU	minimum elong	1598 Sep 30 11:55	6° $\mathcal{\Delta}$ 59'14	2°12'36
morning rise	1592 Jul 26 23:35	18° $\mathcal{\Theta}$ 52'09		max. Earth dist.	1598 Sep 30 14:55	7° $\mathcal{\Delta}$ 00'10	10.61427 AU
				morning rise	1598 Oct 17 13:30	9° $\mathcal{\Delta}$ 04'05	



retrograde	1599 Jan 25 10:48	16°♄23'23	
opposition	1599 Apr 03 08:54	13°♄03'32	2°46'23
min. Earth dist.	1599 Apr 03 06:04	13°♄04'04	8.67368 AU
direct	1599 Jun 12 18:14	9°♄38'21	
evening set	1599 Sep 26 02:03	17°♄14'01	
conjunction	1599 Oct 13 04:04	19°♄17'38	2°16'21
minimum elong	1599 Oct 13 04:03	19°♄17'38	2°16'21
max. Earth dist.	1599 Oct 13 06:35	19°♄18'24	10.72892 AU
morning rise	1599 Oct 30 01:29	21°♄19'55	
retrograde	1600 Feb 06 16:13	28°♄32'16	
opposition	1600 Apr 15 01:02	25°♄13'30	2°46'51
min. Earth dist.	1600 Apr 14 23:28	25°♄13'48	8.78434 AU
direct	1600 Jun 24 17:48	21°♄49'40	
evening set	1600 Oct 07 12:44	29°♄17'16	
	1600 Oct 13 12:56	0°♄	
conjunction	1600 Oct 24 11:06	1°♄18'36	2°13'58
minimum elong	1600 Oct 24 11:07	1°♄18'36	2°13'58
max. Earth dist.	1600 Oct 24 12:14	1°♄18'56	10.83411 AU
morning rise	1600 Nov 10 05:22	3°♄18'45	



retrograde	1600 Feb 06 16:13	28°♄32'16		morning rise	1606 Jan 05 20:07	0°♄29'19	
opposition	1600 Apr 15 01:02	25°♄13'30	2°46'51	retrograde	1606 Apr 16 13:42	7°♄28'23	
min. Earth dist.	1600 Apr 14 23:28	25°♄13'48	8.78434 AU	opposition	1606 Jun 26 06:05	4°♄10'46	0°46'15
direct	1600 Jun 24 17:48	21°♄49'40		min. Earth dist.	1606 Jun 26 11:15	4°♄09'49	9.07780 AU
evening set	1600 Oct 07 12:44	29°♄17'16		direct	1606 Sep 05 02:59	0°♄52'23	
	1600 Oct 13 12:56	0°♄		evening set	1606 Dec 14 21:52	7°♄51'36	
conjunction	1600 Oct 24 11:06	1°♄18'36	2°13'58	conjunction	1606 Dec 31 12:38	9°♄48'14	0°24'49
minimum elong	1600 Oct 24 11:07	1°♄18'36	2°13'58	minimum elong	1606 Dec 31 12:39	9°♄48'14	0°24'48
max. Earth dist.	1600 Oct 24 12:14	1°♄18'56	10.83411 AU	max. Earth dist.	1606 Dec 31 06:29	9°♄46'26	11.06516 AU
morning rise	1600 Nov 10 05:22	3°♄18'45		morning rise	1607 Jan 17 03:47	11°♄45'01	
retrograde	1601 Feb 17 16:12	10°♄25'18		retrograde	1607 Apr 28 12:12	18°♄47'18	
opposition	1601 Apr 27 12:39	7°♄07'24	2°40'06	opposition	1607 Jul 08 08:26	15°♄28'53	0°13'53
min. Earth dist.	1601 Apr 27 12:45	7°♄07'23	8.88310 AU	min. Earth dist.	1607 Jul 08 13:24	15°♄27'58	9.04687 AU
direct	1601 Jul 07 12:15	3°♄44'50		direct	1607 Sep 16 22:30	12°♄10'41	
evening set	1601 Oct 19 14:51	11°♄04'56		desc. node	1607 Dec 13 14:57	17°♄44'20	
				evening set	1607 Dec 26 05:48	19°♄10'00	
conjunction	1601 Nov 05 10:13	13°♄04'22	2°05'56	conjunction	1608 Jan 11 21:05	21°♄07'15	0°-2'-9
minimum elong	1601 Nov 05 10:15	13°♄04'22	2°05'55	minimum elong	1608 Jan 11 21:06	21°♄07'15	0°02'11
max. Earth dist.	1601 Nov 05 09:18	13°♄04'05	10.92536 AU	behind sun begin	1608 Jan 11 14:08	21°♄05'13	
	1601 Nov 21 16:37	15°♄		behind sun end	1608 Jan 12 04:04	21°♄09'17	
morning rise	1601 Nov 22 02:16	15°♄02'49		max. Earth dist.	1608 Jan 11 15:24	21°♄05'35	11.02320 AU
retrograde	1602 Mar 01 12:59	22°♄04'50		morning rise	1608 Jan 28 13:23	23°♄04'52	
opposition	1602 May 09 20:19	18°♄47'33	2°26'51		1608 Apr 24 00:05	0°♄	
min. Earth dist.	1602 May 09 21:19	18°♄47'21	8.96580 AU	retrograde	1608 May 09 14:40	0°♄11'52	
direct	1602 Jul 20 00:21	15°♄26'10			1608 May 25 07:23	30°♄	
evening set	1602 Oct 31 09:40	22°♄39'31		opposition	1608 Jul 19 12:37	26°♄52'26	0°-19'-17
conjunction	1602 Nov 17 02:57	24°♄37'32	1°52'51	min. Earth dist.	1608 Jul 19 17:23	26°♄51'33	8.99401 AU
minimum elong	1602 Nov 17 03:00	24°♄37'33	1°52'51	direct	1608 Sep 27 17:34	23°♄34'08	
max. Earth dist.	1602 Nov 17 00:59	24°♄36'57	10.99885 AU		1608 Dec 31 15:10	0°♄	
morning rise	1602 Dec 03 17:31	26°♄34'46		evening set	1609 Jan 05 16:43	0°♄35'06	
	1603 Jan 04 12:22	0°♄		conjunction	1609 Jan 22 08:42	2°♄33'19	0°-29'-11
retrograde	1603 Mar 13 06:55	3°♄33'40		minimum elong	1609 Jan 22 08:40	2°♄33'19	0°29'12
opposition	1603 May 22 00:48	0°♄16'40	2°07'57	max. Earth dist.	1609 Jan 22 02:34	2°♄31'30	10.96017 AU
min. Earth dist.	1603 May 22 02:18	0°♄16'24	9.02886 AU	morning rise	1609 Feb 08 02:33	4°♄32'08	
	1603 May 25 18:58	30°♄		retrograde	1609 May 21 22:43	11°♄45'16	
direct	1603 Aug 01 07:08	26°♄56'21		opposition	1609 Jul 31 19:59	8°♄24'37	0°-52'-10
	1603 Oct 04 00:36	0°♄		min. Earth dist.	1609 Aug 01 01:00	8°♄23'41	8.92135 AU
evening set	1603 Nov 11 22:43	4°♄04'03		direct	1609 Oct 09 13:47	5°♄05'59	
conjunction	1603 Nov 28 14:42	6°♄01'06	1°35'26	evening set	1610 Jan 17 07:56	12°♄10'08	
minimum elong	1603 Nov 28 14:44	6°♄01'06	1°35'27	conjunction	1610 Feb 03 00:56	14°♄09'37	0°-55'-25
max. Earth dist.	1603 Nov 28 12:13	6°♄00'22	11.05114 AU	minimum elong	1610 Feb 03 00:54	14°♄09'36	0°55'26
morning rise	1603 Dec 15 04:27	7°♄57'33		max. Earth dist.	1610 Feb 02 18:15	14°♄07'37	10.87853 AU
retrograde	1604 Mar 24 01:36	14°♄54'53			1610 Feb 10 01:00	15°♄	
opposition	1604 Jun 02 03:11	11°♄37'58	1°44'15	morning rise	1610 Feb 19 20:47	16°♄09'58	
min. Earth dist.	1604 Jun 02 05:47	11°♄37'29	9.06923 AU	retrograde	1610 Jun 03 10:58	23°♄30'34	
direct	1604 Aug 12 08:49	8°♄18'31		opposition	1610 Aug 13 07:12	20°♄08'32	-1°-23'-30
evening set	1604 Nov 22 08:03	15°♄21'56		min. Earth dist.	1610 Aug 13 12:29	20°♄07'33	8.83164 AU
conjunction	1604 Dec 08 23:07	17°♄18'26	1°14'26	direct	1610 Oct 21 13:16	16°♄49'22	
minimum elong	1604 Dec 08 23:09	17°♄18'27	1°14'26	evening set	1611 Jan 29 05:16	23°♄58'12	
max. Earth dist.	1604 Dec 08 19:03	17°♄17'15	11.07979 AU	conjunction	1611 Feb 14 23:51	25°♄59'18	-1°-19'-46
morning rise	1604 Dec 25 12:46	19°♄14'35		minimum elong	1611 Feb 14 23:49	25°♄59'17	1°19'46
retrograde	1605 Apr 04 18:51	26°♄11'58		max. Earth dist.	1611 Feb 14 17:56	25°♄57'30	10.78130 AU
opposition	1605 Jun 14 04:34	22°♄54'52	1°16'42	morning rise	1611 Mar 03 21:54	28°♄01'28	
min. Earth dist.	1605 Jun 14 08:48	22°♄54'05	9.08549 AU		1611 Mar 21 02:12	0°♄	
direct	1605 Aug 24 05:36	19°♄36'05		retrograde	1611 Jun 16 06:48	5°♄30'37	
evening set	1605 Dec 03 15:17	26°♄36'40		opposition	1611 Aug 25 22:47	2°♄07'08	-1°-51'-56
conjunction	1605 Dec 20 05:53	28°♄33'02	0°50'36	min. Earth dist.	1611 Aug 26 03:21	2°♄06'16	8.72822 AU
minimum elong	1605 Dec 20 05:55	28°♄33'03	0°50'37		1611 Sep 25 02:35	30°♄	
max. Earth dist.	1605 Dec 20 00:06	28°♄31'20	11.08432 AU	direct	1611 Nov 02 18:03	28°♄47'14	
	1606 Jan 01 14:45	0°♄			1611 Dec 10 08:37	0°♄	



evening set	1612 Feb 10 10:01	6° <del>✕</del> 02'07		conjunction	1618 May 18 19:54	27° <del>8</del> 33'38	-1°-47'-40
				minimum elong	1618 May 18 19:57	27° <del>8</del> 33'39	1°47'41
conjunction	1612 Feb 27 06:42	8° <del>✕</del> 05'10	-1°-41'-5	max. Earth dist.	1618 May 18 23:46	27° <del>8</del> 34'53	10.06237 AU
minimum elong	1612 Feb 27 06:40	8° <del>✕</del> 05'10	1°41'06	morning rise	1618 Jun 05 19:25	29° <del>8</del> 53'04	
max. Earth dist.	1612 Feb 27 02:05	8° <del>✕</del> 03'45	10.67214 AU		1618 Jun 06 17:13	0° <del>II</del>	
morning rise	1612 Mar 15 07:12	10° <del>✕</del> 09'27		retrograde	1618 Sep 20 11:09	8° <del>II</del> 14'20	
retrograde	1612 Jun 28 12:09	17° <del>✕</del> 47'57		opposition	1618 Nov 26 23:52	4° <del>II</del> 44'24	-2°00'-36
opposition	1612 Sep 06 19:50	14° <del>✕</del> 23'00	-2°-16'-3	min. Earth dist.	1618 Nov 26 20:13	4° <del>II</del> 45'09	8.03950 AU
min. Earth dist.	1612 Sep 06 23:06	14° <del>✕</del> 22'22	8.61511 AU	direct	1619 Feb 01 09:08	1° <del>II</del> 17'05	
direct	1612 Nov 14 01:54	11° <del>✕</del> 02'14		evening set	1619 May 15 21:18	9° <del>II</del> 26'13	
evening set	1613 Feb 21 23:21	18° <del>✕</del> 24'18					
				conjunction	1619 Jun 02 21:44	11° <del>II</del> 46'26	-1°-24'-15
conjunction	1613 Mar 10 22:35	20° <del>✕</del> 29'35	-1°-58'-13	minimum elong	1619 Jun 02 21:47	11° <del>II</del> 46'27	1°24'16
minimum elong	1613 Mar 10 22:33	20° <del>✕</del> 29'35	1°58'14	max. Earth dist.	1619 Jun 03 03:04	11° <del>II</del> 48'10	10.02179 AU
max. Earth dist.	1613 Mar 10 18:58	20° <del>✕</del> 28'28	10.55562 AU	morning rise	1619 Jun 21 00:17	14° <del>II</del> 07'21	
morning rise	1613 Mar 28 02:04	22° <del>✕</del> 36'15		retrograde	1619 Oct 05 03:22	22° <del>II</del> 28'23	
	1613 Jun 19 23:15	0° <del>Y</del>		opposition	1619 Dec 11 05:51	18° <del>II</del> 58'47	-1°-27'-54
retrograde	1613 Jul 12 00:00	0° <del>Y</del> 24'27		min. Earth dist.	1619 Dec 11 01:18	18° <del>II</del> 59'44	8.01280 AU
	1613 Aug 03 02:23	30° <del>R</del> <del>✕</del>		direct	1620 Feb 15 16:25	15° <del>II</del> 30'38	
opposition	1613 Sep 19 22:49	26° <del>✕</del> 58'06	-2°-34'-23	evening set	1620 May 29 23:53	23° <del>II</del> 43'45	
min. Earth dist.	1613 Sep 20 00:54	26° <del>✕</del> 57'41	8.49720 AU				
direct	1613 Nov 26 16:15	23° <del>✕</del> 36'19		conjunction	1620 Jun 17 03:13	26° <del>II</del> 04'59	0°-55'-32
	1614 Feb 25 18:27	0° <del>Y</del>		minimum elong	1620 Jun 17 03:16	26° <del>II</del> 05'00	0°55'33
evening set	1614 Mar 06 22:29	1° <del>Y</del> 06'32		max. Earth dist.	1620 Jun 17 09:28	26° <del>II</del> 07'02	10.01018 AU
				morning rise	1620 Jul 05 07:32	28° <del>II</del> 26'32	
conjunction	1614 Mar 24 00:52	3° <del>Y</del> 14'19	-2°-10'-1		1620 Jul 17 17:38	0° <del>☾</del>	
minimum elong	1614 Mar 24 00:50	3° <del>Y</del> 14'18	2°10'02	retrograde	1620 Oct 18 18:00	6° <del>☾</del> 44'37	
max. Earth dist.	1614 Mar 23 21:36	3° <del>Y</del> 13'17	10.43707 AU	opposition	1620 Dec 24 12:03	3° <del>☾</del> 15'41	0°-49'-39
morning rise	1614 Apr 10 07:56	5° <del>Y</del> 23'35		min. Earth dist.	1620 Dec 24 07:07	3° <del>☾</del> 16'42	8.01571 AU
retrograde	1614 Jul 25 19:28	13° <del>Y</del> 21'16			1621 Feb 13 21:57	30° <del>R</del> <del>II</del>	
opposition	1614 Oct 03 07:43	9° <del>Y</del> 53'38	-2°-45'-31	direct	1621 Mar 01 04:25	29° <del>II</del> 46'51	
min. Earth dist.	1614 Oct 03 09:19	9° <del>Y</del> 53'19	8.38006 AU		1621 Mar 16 12:31	0° <del>☾</del>	
direct	1614 Dec 09 14:09	6° <del>Y</del> 30'44		evening set	1621 Jun 14 04:24	8° <del>☾</del> 01'49	
evening set	1615 Mar 20 07:50	14° <del>Y</del> 09'37					
				conjunction	1621 Jul 02 09:08	10° <del>☾</del> 23'09	0°-23'-25
conjunction	1615 Apr 06 14:04	16° <del>Y</del> 20'07	-2°-15'-27	minimum elong	1621 Jul 02 09:09	10° <del>☾</del> 23'09	0°23'26
minimum elong	1615 Apr 06 14:04	16° <del>Y</del> 20'07	2°15'28	max. Earth dist.	1621 Jul 02 15:37	10° <del>☾</del> 25'15	10.02814 AU
max. Earth dist.	1615 Apr 06 11:46	16° <del>Y</del> 19'23	10.32236 AU	morning rise	1621 Jul 20 13:35	12° <del>☾</del> 44'22	
morning rise	1615 Apr 24 01:11	18° <del>Y</del> 32'08		retrograde	1621 Nov 02 03:14	20° <del>☾</del> 57'05	
retrograde	1615 Aug 08 22:26	26° <del>Y</del> 38'28		opposition	1622 Jan 07 16:48	17° <del>☾</del> 29'04	0°-8'-31
opposition	1615 Oct 16 22:37	23° <del>Y</del> 09'49	-2°-48'-14	min. Earth dist.	1622 Jan 07 11:57	17° <del>☾</del> 30'04	8.04764 AU
min. Earth dist.	1615 Oct 16 23:31	23° <del>Y</del> 09'38	8.26971 AU	direct	1622 Mar 15 18:52	13° <del>☾</del> 59'50	
direct	1615 Dec 22 19:16	19° <del>Y</del> 45'43		asc. node	1622 Mar 26 09:44	14° <del>☾</del> 06'08	
evening set	1616 Apr 02 03:23	27° <del>Y</del> 33'21		evening set	1622 Jun 29 07:54	22° <del>☾</del> 14'25	
conjunction	1616 Apr 19 14:07	29° <del>Y</del> 46'38	-2°-13'-42	conjunction	1622 Jul 17 12:11	24° <del>☾</del> 34'50	0°09'57
minimum elong	1616 Apr 19 14:08	29° <del>Y</del> 46'38	2°13'44	minimum elong	1622 Jul 17 12:10	24° <del>☾</del> 34'50	0°09'57
max. Earth dist.	1616 Apr 19 13:36	29° <del>Y</del> 46'28	10.21763 AU	behind sun begin	1622 Jul 17 06:17	24° <del>☾</del> 32'57	
	1616 Apr 21 07:49	0° <del>8</del>		behind sun end	1622 Jul 17 18:04	24° <del>☾</del> 36'44	
morning rise	1616 May 07 05:27	2° <del>8</del> 01'23		max. Earth dist.	1622 Jul 17 18:14	24° <del>☾</del> 36'47	10.07374 AU
retrograde	1616 Aug 22 06:59	10° <del>8</del> 14'57		morning rise	1622 Aug 04 14:58	26° <del>☾</del> 54'45	
opposition	1616 Oct 29 18:57	6° <del>8</del> 45'31	-2°-41'-42		1622 Aug 30 04:22	0° <del>♁</del>	
min. Earth dist.	1616 Oct 29 18:33	6° <del>8</del> 45'36	8.17233 AU	retrograde	1622 Nov 16 05:38	5° <del>♁</del> 00'18	
direct	1617 Jan 04 09:04	3° <del>8</del> 20'16		opposition	1623 Jan 21 18:27	1° <del>♁</del> 33'26	0°32'39
evening set	1617 Apr 16 08:58	11° <del>8</del> 16'13		min. Earth dist.	1623 Jan 21 13:48	1° <del>♁</del> 34'23	8.10558 AU
					1623 Feb 10 10:46	30° <del>R</del> <del>☾</del>	
conjunction	1617 May 04 00:34	13° <del>8</del> 32'11	-2°-4'-24	direct	1623 Mar 30 08:30	28° <del>☾</del> 04'05	
minimum elong	1617 May 04 00:37	13° <del>8</del> 32'12	2°04'26		1623 May 16 13:37	0° <del>♁</del>	
max. Earth dist.	1617 May 04 02:20	13° <del>8</del> 32'46	10.12911 AU	evening set	1623 Jul 14 07:15	6° <del>♁</del> 16'13	
	1617 May 15 08:50	15° <del>8</del>					
morning rise	1617 May 21 20:11	15° <del>8</del> 49'29		conjunction	1623 Aug 01 09:26	8° <del>♁</del> 34'55	0°42'16
retrograde	1617 Sep 05 19:32	24° <del>8</del> 08'11		minimum elong	1623 Aug 01 09:24	8° <del>♁</del> 34'54	0°42'16
opposition	1617 Nov 12 19:43	20° <del>8</del> 38'19	-2°-25'-39	max. Earth dist.	1623 Aug 01 14:49	8° <del>♁</del> 36'39	10.14290 AU
min. Earth dist.	1617 Nov 12 17:38	20° <del>8</del> 38'44	8.09392 AU	morning rise	1623 Aug 19 08:58	10° <del>♁</del> 52'44	
direct	1618 Jan 18 06:12	17° <del>8</del> 11'58			1623 Sep 23 18:22	15° <del>♁</del>	
evening set	1618 Apr 30 23:31	25° <del>8</del> 15'15		retrograde	1623 Nov 30 01:29	18° <del>♁</del> 50'06	
				opposition	1624 Feb 04 16:01	15° <del>♁</del> 24'30	1°11'13



min. Earth dist.	1624 Feb 04 11:28	15°♏25'26	8.18472 AU	min. Earth dist.	1630 Apr 22 10:46	2°♌11'54	8.82674 AU
	1624 Feb 09 16:42	15°♌♏			1630 May 24 01:19	30°♌♏	
direct	1624 Apr 12 18:42	11°♏55'23		direct	1630 Jul 02 09:49	28°♏48'18	
	1624 Jun 12 19:16	15°♏			1630 Aug 10 01:55	0°♌	
evening set	1624 Jul 27 23:57	20°♏03'22		evening set	1630 Oct 14 18:20	6°♌12'13	
conjunction	1624 Aug 14 22:43	22°♏19'44	1°11'40	conjunction	1630 Oct 31 15:11	8°♌12'38	2°10'06
minimum elong	1624 Aug 14 22:40	22°♏19'43	1°11'40	minimum elong	1630 Oct 31 15:12	8°♌12'39	2°10'05
max. Earth dist.	1624 Aug 15 03:38	22°♏21'18	10.23056 AU	max. Earth dist.	1630 Oct 31 15:07	8°♌12'37	10.87099 AU
morning rise	1624 Sep 01 17:49	24°♏34'55		morning rise	1630 Nov 17 08:10	10°♌11'58	
	1624 Oct 21 08:19	0°♌			1631 Jan 03 00:19	15°♌	
retrograde	1624 Dec 12 15:18	2°♌23'37		retrograde	1631 Feb 24 19:30	17°♌16'26	
	1625 Feb 04 15:29	30°♌♏			1631 Apr 20 23:39	15°♌♌	
opposition	1625 Feb 17 08:46	28°♏59'24	1°44'57	opposition	1631 May 04 20:57	13°♌58'25	2°33'27
min. Earth dist.	1625 Feb 17 04:27	29°♏00'16	8.28012 AU	min. Earth dist.	1631 May 04 21:20	13°♌58'21	8.91410 AU
direct	1625 Apr 26 23:57	25°♏30'49		direct	1631 Jul 14 23:34	10°♌36'03	
	1625 Jul 11 17:34	0°♌			1631 Sep 30 12:44	15°♌	
evening set	1625 Aug 11 08:31	3°♌33'14		evening set	1631 Oct 26 16:28	17°♌52'51	
conjunction	1625 Aug 29 02:52	5°♌46'50	1°36'33	conjunction	1631 Nov 12 10:50	19°♌51'39	1°59'09
minimum elong	1625 Aug 29 02:49	5°♌46'49	1°36'33	minimum elong	1631 Nov 12 10:53	19°♌51'40	1°59'09
max. Earth dist.	1625 Aug 29 07:21	5°♌48'14	10.33212 AU	max. Earth dist.	1631 Nov 12 09:44	19°♌51'20	10.95045 AU
morning rise	1625 Sep 15 16:46	7°♌59'02		morning rise	1631 Nov 29 01:59	21°♌49'34	
retrograde	1625 Dec 25 21:04	15°♌38'55		retrograde	1632 Mar 07 13:43	28°♌50'14	
opposition	1626 Mar 02 20:14	12°♌16'06	2°12'11	opposition	1632 May 16 02:53	25°♌32'38	2°16'55
min. Earth dist.	1626 Mar 02 16:33	12°♌16'50	8.38722 AU	min. Earth dist.	1632 May 16 04:41	25°♌32'17	8.98472 AU
direct	1626 May 11 00:28	8°♌48'16		direct	1632 Jul 26 07:41	22°♌11'17	
evening set	1626 Aug 25 07:22	16°♌43'55		evening set	1632 Nov 06 08:14	29°♌22'00	
					1632 Nov 11 18:47	0°♌	
conjunction	1626 Sep 11 20:46	18°♌54'31	1°55'49	conjunction	1632 Nov 23 00:45	1°♌19'36	1°43'33
minimum elong	1626 Sep 11 20:43	18°♌54'31	1°55'49	minimum elong	1632 Nov 23 00:48	1°♌19'37	1°43'33
max. Earth dist.	1626 Sep 12 00:36	18°♌55'43	10.44286 AU	max. Earth dist.	1632 Nov 22 21:58	1°♌18'47	11.01189 AU
morning rise	1626 Sep 29 05:20	21°♌03'41		morning rise	1632 Dec 09 14:58	3°♌16'33	
retrograde	1627 Jan 07 18:54	28°♌34'57		retrograde	1633 Mar 19 07:25	10°♌14'54	
opposition	1627 Mar 16 02:18	25°♌13'26	2°31'54	opposition	1633 May 28 06:19	6°♌57'28	1°55'11
min. Earth dist.	1627 Mar 15 23:51	25°♌13'55	8.50093 AU	min. Earth dist.	1633 May 28 09:02	6°♌56'58	9.03600 AU
direct	1627 May 24 18:53	21°♌46'33		direct	1633 Aug 07 12:39	3°♌37'05	
evening set	1627 Sep 07 19:28	29°♌34'31		evening set	1633 Nov 17 19:03	10°♌42'49	
	1627 Sep 11 07:30	0°♏					
conjunction	1627 Sep 25 03:53	1°♏42'09	2°08'50	conjunction	1633 Dec 04 10:28	12°♌39'40	1°24'00
minimum elong	1627 Sep 25 03:51	1°♏42'09	2°08'50	minimum elong	1633 Dec 04 10:30	12°♌39'41	1°24'00
max. Earth dist.	1627 Sep 25 06:15	1°♏42'53	10.55745 AU	max. Earth dist.	1633 Dec 04 06:59	12°♌38'38	11.05307 AU
morning rise	1627 Oct 12 07:33	3°♏48'22		morning rise	1633 Dec 21 00:18	14°♌36'04	
retrograde	1628 Jan 20 09:46	11°♏11'32		retrograde	1634 Mar 31 00:28	21°♌33'39	
opposition	1628 Mar 28 02:39	7°♏51'11	2°43'41	opposition	1634 Jun 09 08:06	18°♌16'09	1°29'11
min. Earth dist.	1628 Mar 28 01:19	7°♏51'26	8.61566 AU	min. Earth dist.	1634 Jun 09 10:38	18°♌15'41	9.06611 AU
direct	1628 Jun 06 06:12	4°♏25'22		direct	1634 Aug 19 12:19	14°♌56'37	
evening set	1628 Sep 19 21:04	12°♏05'14		evening set	1634 Nov 29 02:51	21°♌58'39	
conjunction	1628 Oct 07 00:53	14°♏10'07	2°15'25	conjunction	1634 Dec 15 17:48	23°♌55'10	1°01'18
minimum elong	1628 Oct 07 00:52	14°♏10'07	2°15'25	minimum elong	1634 Dec 15 17:50	23°♌55'10	1°01'19
max. Earth dist.	1628 Oct 07 01:37	14°♏10'21	10.67036 AU	max. Earth dist.	1634 Dec 15 14:36	23°♌54'13	11.07246 AU
morning rise	1628 Oct 24 00:17	16°♏13'39		morning rise	1635 Jan 01 07:45	25°♌51'27	
retrograde	1629 Jan 31 16:34	23°♏29'29		retrograde	1635 Feb 10 06:32	0°♏	
opposition	1629 Apr 09 21:23	20°♏10'07	2°47'33	opposition	1635 Apr 11 20:01	2°♏49'48	
min. Earth dist.	1629 Apr 09 20:39	20°♏10'15	8.72590 AU		1635 Jun 15 00:38	30°♌♌	
direct	1629 Jun 19 11:21	16°♏45'25		opposition	1635 Jun 21 09:10	29°♌32'01	0°59'51
evening set	1629 Oct 02 12:25	24°♏17'11		min. Earth dist.	1635 Jun 21 11:55	29°♌31'30	9.07399 AU
				direct	1635 Aug 31 09:28	26°♌13'08	
conjunction	1629 Oct 19 12:22	26°♏19'38	2°15'42		1635 Nov 10 11:17	0°♏	
minimum elong	1629 Oct 19 12:22	26°♏19'38	2°15'42	evening set	1635 Dec 10 09:24	3°♏12'55	
max. Earth dist.	1629 Oct 19 12:18	26°♏19'37	10.77639 AU				
morning rise	1629 Nov 05 08:10	28°♏20'51		conjunction	1635 Dec 27 00:12	5°♏09'29	0°36'16
	1629 Nov 19 15:45	0°♌		minimum elong	1635 Dec 27 00:13	5°♏09'29	0°36'16
retrograde	1630 Feb 12 19:41	5°♌30'24		max. Earth dist.	1635 Dec 26 20:21	5°♏08'20	11.06933 AU
opposition	1630 Apr 22 11:18	2°♌11'48	2°43'56	morning rise	1636 Jan 12 14:51	7°♏06'02	



retrograde	1636 Apr 22 16:34	14°☾06'40		minimum elong	1642 Mar 05 15:52	15°☿12'36	1°51'05
opposition	1636 Jul 02 10:49	10°☾48'24	0°28'12	max. Earth dist.	1642 Mar 05 11:44	15°☿11'20	10.63748 AU
min. Earth dist.	1636 Jul 02 14:28	10°☾47'44	9.05934 AU	morning rise	1642 Mar 22 17:56	17°☿17'48	
direct	1636 Sep 11 03:19	7°☾29'58		retrograde	1642 Jul 06 06:54	25°☿00'12	
evening set	1636 Dec 20 16:24	14°☾29'02		opposition	1642 Sep 14 11:20	21°☿35'12	-2°-26'-44
				min. Earth dist.	1642 Sep 14 14:25	21°☿34'36	8.58085 AU
conjunction	1637 Jan 06 07:18	16°☾25'56	0°09'47	direct	1642 Nov 21 10:51	18°☿14'35	
minimum elong	1637 Jan 06 07:18	16°☾25'56	0°09'46	evening set	1643 Mar 01 12:06	25°☿39'38	
behind sun begin	1637 Jan 06 01:33	16°☾24'16					
behind sun end	1637 Jan 06 13:03	16°☾27'37		conjunction	1643 Mar 18 12:47	27°☿45'50	-2°-5'-19
max. Earth dist.	1637 Jan 06 02:12	16°☾24'27	11.04377 AU	minimum elong	1643 Mar 18 12:46	27°☿45'49	2°05'20
morning rise	1637 Jan 22 23:06	18°☾23'08		max. Earth dist.	1643 Mar 18 09:40	27°☿44'51	10.52150 AU
retrograde	1637 May 04 15:16	25°☾27'39		morning rise	1643 Apr 04 17:58	29°☿53'27	
desc. node	1637 May 21 19:40	25°☾13'34			1643 Apr 05 15:30	0°♊	
opposition	1637 Jul 14 13:59	22°☾08'40	0°-4'-43	retrograde	1643 Jul 19 21:57	7°♊45'18	
min. Earth dist.	1637 Jul 14 18:17	22°☾07'52	9.02273 AU	opposition	1643 Sep 27 16:29	4°♊18'58	-2°-41'-11
direct	1637 Sep 22 22:23	18°☾50'26		min. Earth dist.	1643 Sep 27 18:42	4°♊18'32	8.46361 AU
evening set	1638 Jan 01 01:29	25°☾50'17		direct	1643 Dec 04 05:15	0°♊57'17	
				evening set	1644 Mar 13 15:47	8°♊30'41	
conjunction	1638 Jan 17 17:00	27°☾47'57	0°-17'-21				
minimum elong	1638 Jan 17 16:59	27°☾47'56	0°17'23	conjunction	1644 Mar 30 20:05	10°♊39'29	-2°-13'-41
max. Earth dist.	1638 Jan 17 12:06	27°☾46'30	10.99674 AU	minimum elong	1644 Mar 30 20:05	10°♊39'29	2°13'42
morning rise	1638 Feb 03 10:11	29°☾46'06		max. Earth dist.	1644 Mar 30 17:56	10°♊38'49	10.40388 AU
	1638 Feb 05 10:13	0°♋		morning rise	1644 Apr 17 04:54	12°♊49'47	
retrograde	1638 May 16 20:53	6°♋55'59		retrograde	1644 Aug 01 21:31	20°♊50'45	
opposition	1638 Jul 26 19:34	3°♋36'03	0°-37'-49	opposition	1644 Oct 10 03:43	17°♊23'12	-2°-47'-48
min. Earth dist.	1638 Jul 26 23:25	3°♋35'20	8.96551 AU	min. Earth dist.	1644 Oct 10 04:43	17°♊23'00	8.34786 AU
direct	1638 Oct 04 19:21	0°♋17'49		direct	1644 Dec 16 05:18	14°♊00'19	
evening set	1639 Jan 12 14:15	7°♋19'56		evening set	1645 Mar 27 05:38	21°♊42'27	
conjunction	1639 Jan 29 06:49	9°♋18'41	0°-44'-2	conjunction	1645 Apr 13 14:06	23°♊54'01	-2°-15'-16
minimum elong	1639 Jan 29 06:47	9°♋18'41	0°44'03	minimum elong	1645 Apr 13 14:07	23°♊54'02	2°15'17
max. Earth dist.	1639 Jan 29 02:42	9°♋17'27	10.92983 AU	max. Earth dist.	1645 Apr 13 12:42	23°♊53'35	10.29139 AU
morning rise	1639 Feb 15 01:36	11°♋18'09		morning rise	1645 May 01 03:07	26°♊07'06	
	1639 Mar 21 08:37	15°♋			1645 Jun 03 12:58	0°♌	
retrograde	1639 May 29 07:19	18°♋34'42		retrograde	1645 Aug 16 03:25	4°♌16'04	
opposition	1639 Aug 08 04:28	15°♋13'39	-1°-9'-54	opposition	1645 Oct 23 20:41	0°♌47'30	-2°-45'-34
min. Earth dist.	1639 Aug 08 07:37	15°♋13'04	8.88962 AU	min. Earth dist.	1645 Oct 23 20:52	0°♌47'28	8.24061 AU
	1639 Aug 11 05:32	15°♌			1645 Nov 02 19:06	30°♌	
direct	1639 Oct 16 16:20	11°♋55'12		direct	1645 Dec 29 13:35	27°♊23'19	
	1639 Dec 17 20:12	15°♋			1646 Feb 22 03:54	0°♌	
evening set	1640 Jan 24 08:29	19°♋01'07		evening set	1646 Apr 10 05:48	5°♌14'04	
conjunction	1640 Feb 10 02:15	21°♋01'14	-1°-9'-17	conjunction	1646 Apr 27 18:53	7°♌28'26	-2°-9'-28
minimum elong	1640 Feb 10 02:13	21°♋01'14	1°09'18	minimum elong	1646 Apr 27 18:55	7°♌28'27	2°09'29
max. Earth dist.	1640 Feb 09 22:09	21°♋00'00	10.84541 AU	max. Earth dist.	1646 Apr 27 18:15	7°♌28'14	10.19099 AU
morning rise	1640 Feb 26 23:00	23°♋02'18		morning rise	1646 May 15 12:21	9°♌44'12	
	1640 May 17 15:34	0°♍			1646 Jul 01 10:16	15°♌	
retrograde	1640 Jun 10 00:23	0°♍26'41		retrograde	1646 Aug 30 13:04	17°♌59'22	
	1640 Jul 03 13:08	30°♌			1646 Oct 31 14:53	15°♌	
opposition	1640 Aug 19 17:35	27°♋04'25	-1°-39'-41	opposition	1646 Nov 06 18:28	14°♌30'04	-2°-33'-57
min. Earth dist.	1640 Aug 19 20:38	27°♋03'50	8.79784 AU	min. Earth dist.	1646 Nov 06 18:04	14°♌30'09	8.14856 AU
direct	1640 Oct 27 17:25	23°♋45'28		direct	1647 Jan 12 06:29	11°♌04'33	
	1641 Jan 27 08:43	0°♍			1647 Mar 21 03:24	15°♌	
evening set	1641 Feb 04 09:27	0°♍56'35		evening set	1647 Apr 24 15:18	19°♌03'15	
conjunction	1641 Feb 21 04:50	2°♍58'25	-1°-32'-1	conjunction	1647 May 12 09:10	21°♌20'13	-1°-56'-10
minimum elong	1641 Feb 21 04:48	2°♍58'24	1°32'01	minimum elong	1647 May 12 09:13	21°♌20'14	1°56'11
max. Earth dist.	1641 Feb 21 00:16	2°♍57'01	10.74675 AU	max. Earth dist.	1647 May 12 09:36	21°♌20'21	10.10896 AU
morning rise	1641 Mar 10 04:03	5°♍01'24		morning rise	1647 May 30 06:53	23°♌38'23	
retrograde	1641 Jun 23 00:51	12°♍34'30			1647 Jul 28 11:14	0°♎	
opposition	1641 Sep 01 11:47	9°♍10'54	-2°-5'-46	retrograde	1647 Sep 14 02:09	1°♎57'28	
min. Earth dist.	1641 Sep 01 15:04	9°♍10'16	8.69368 AU		1647 Nov 01 10:12	30°♌	
direct	1641 Nov 08 22:38	5°♍51'14		opposition	1647 Nov 20 20:07	28°♌27'45	-2°-13'-5
evening set	1642 Feb 16 18:13	13°♍08'45		min. Earth dist.	1647 Nov 20 19:12	28°♌27'58	8.07751 AU
				direct	1648 Jan 26 06:06	25°♌00'58	
conjunction	1642 Mar 05 15:54	15°♍12'37	-1°-51'-4		1648 Apr 12 18:10	0°♎	



evening set	1648 May 08 08:34	3°II06'23		direct	1654 Apr 20 16:05	19°Ω22'12	
				evening set	1654 Aug 05 00:00	27°Ω27'38	
conjunction	1648 May 26 06:56	5°II25'31	-1°-35'-48				
minimum elong	1648 May 26 07:00	5°II25'32	1°35'50	conjunction	1654 Aug 22 20:28	29°Ω42'40	1°25'21
max. Earth dist.	1648 May 26 09:03	5°II26'12	10.05050 AU	minimum elong	1654 Aug 22 20:25	29°Ω42'39	1°25'21
morning rise	1648 Jun 13 08:13	7°II45'34		max. Earth dist.	1654 Aug 23 00:59	29°Ω44'06	10.27145 AU
retrograde	1648 Sep 27 16:44	16°II05'57			1654 Aug 25 03:05	0°♐	
opposition	1648 Dec 04 00:38	12°II36'10	-1°-43'-53	morning rise	1654 Sep 09 13:01	1°♐56'26	
min. Earth dist.	1648 Dec 03 22:22	12°II36'38	8.03200 AU	retrograde	1654 Dec 20 00:08	9°♐40'40	
direct	1649 Feb 08 11:27	9°II08'16		opposition	1655 Feb 24 21:33	6°♐16'42	2°00'07
evening set	1649 May 23 07:58	17°II18'46		min. Earth dist.	1655 Feb 24 17:50	6°♐17'26	8.32520 AU
				direct	1655 May 04 20:37	2°♐47'59	
				evening set	1655 Aug 19 03:14	10°♐47'05	
conjunction	1649 Jun 10 10:02	19°II39'25	-1°-9'-28				
minimum elong	1649 Jun 10 10:05	19°II39'26	1°09'29	conjunction	1655 Sep 05 18:57	12°♐59'10	1°47'22
max. Earth dist.	1649 Jun 10 13:51	19°II40'39	10.01929 AU	minimum elong	1655 Sep 05 18:54	12°♐59'09	1°47'22
morning rise	1649 Jun 28 13:45	22°II00'36		max. Earth dist.	1655 Sep 05 22:46	13°♐00'22	10.38063 AU
	1649 Sep 23 12:51	0°♑		morning rise	1655 Sep 23 06:18	15°♐09'52	
retrograde	1649 Oct 12 06:45	0°♑19'33		retrograde	1656 Jan 02 00:47	22°♐45'16	
	1649 Oct 31 01:31	30°♐II		opposition	1656 Mar 09 05:47	19°♐22'43	2°23'28
opposition	1649 Dec 18 05:49	26°II50'04	-1°-8'-5	min. Earth dist.	1656 Mar 09 02:01	19°♐23'28	8.43903 AU
min. Earth dist.	1649 Dec 18 02:21	26°II50'47	8.01487 AU	direct	1656 May 17 18:03	15°♐55'00	
direct	1650 Feb 22 21:21	23°II21'15		evening set	1656 Aug 31 20:11	23°♐46'44	
	1650 May 25 19:41	0°♑					
evening set	1650 Jun 07 10:55	1°♑34'54					
				conjunction	1656 Sep 18 07:03	25°♐55'49	2°03'22
conjunction	1650 Jun 25 15:16	3°♑56'12	0°-38'-48	minimum elong	1656 Sep 18 07:01	25°♐55'48	2°03'23
minimum elong	1650 Jun 25 15:18	3°♑56'13	0°38'49	max. Earth dist.	1656 Sep 18 10:37	25°♐56'56	10.49694 AU
max. Earth dist.	1650 Jun 25 20:23	3°♑57'52	10.01717 AU	morning rise	1656 Oct 05 13:11	28°♐03'28	
morning rise	1650 Jul 13 19:51	6°♑17'36			1656 Oct 22 00:04	0°♑	
retrograde	1650 Oct 26 17:31	14°♑32'39		retrograde	1657 Jan 13 19:48	5°♑30'27	
opposition	1651 Jan 01 10:36	11°♑03'48	0°-28'-5	opposition	1657 Mar 22 08:28	2°♑09'16	2°39'00
min. Earth dist.	1651 Jan 01 06:11	11°♑04'43	8.02708 AU	min. Earth dist.	1657 Mar 22 05:07	2°♑09'55	8.55687 AU
direct	1651 Mar 09 09:40	7°♑34'22			1657 Apr 21 04:59	30°♐♐	
evening set	1651 Jun 22 14:20	15°♑49'00		direct	1657 May 31 07:40	28°♐42'45	
					1657 Jul 09 23:37	0°♑	
conjunction	1651 Jul 10 19:10	18°♑09'58	0°-5'-53	evening set	1657 Sep 14 02:40	6°♑26'31	
minimum elong	1651 Jul 10 19:11	18°♑09'58	0°05'54				
behind sun begin	1651 Jul 10 12:10	18°♑07'43		conjunction	1657 Oct 01 08:49	8°♑32'44	2°13'00
behind sun end	1651 Jul 11 02:12	18°♑12'14		minimum elong	1657 Oct 01 08:48	8°♑32'43	2°13'00
max. Earth dist.	1651 Jul 11 01:14	18°♑11'54	10.04403 AU	max. Earth dist.	1657 Oct 01 12:03	8°♑33'43	10.61434 AU
morning rise	1651 Jul 28 22:53	20°♑30'36		morning rise	1657 Oct 18 10:08	10°♑37'31	
asc. node	1651 Sep 15 09:48	25°♑57'33		retrograde	1658 Jan 26 07:27	17°♑56'46	
retrograde	1651 Nov 09 23:25	28°♑39'42		opposition	1658 Apr 04 05:50	14°♑36'51	2°46'34
opposition	1652 Jan 15 13:21	25°♑11'48	0°13'20	min. Earth dist.	1658 Apr 04 03:40	14°♑37'16	8.67295 AU
min. Earth dist.	1652 Jan 15 08:32	25°♑12'48	8.06769 AU	direct	1658 Jun 13 14:16	11°♑11'37	
direct	1652 Mar 22 21:51	21°♑42'02		evening set	1658 Sep 26 22:54	18°♑47'15	
evening set	1652 Jul 06 15:27	29°♑55'31					
	1652 Jul 07 05:38	0°Ω		conjunction	1658 Oct 14 00:44	20°♑50'51	2°16'13
				minimum elong	1658 Oct 14 00:43	20°♑50'51	2°16'14
conjunction	1652 Jul 24 19:00	2°Ω15'14	0°27'12	max. Earth dist.	1658 Oct 14 02:40	20°♑51'26	10.72736 AU
minimum elong	1652 Jul 24 18:59	2°Ω15'13	0°27'12	morning rise	1658 Oct 30 22:04	22°♑53'08	
max. Earth dist.	1652 Jul 25 01:12	2°Ω17'13	10.09798 AU		1659 Jan 28 05:29	0°♐	
morning rise	1652 Aug 11 20:12	4°Ω34'12		retrograde	1659 Feb 07 12:33	0°♐05'34	
retrograde	1652 Nov 22 23:34	12°Ω35'48			1659 Feb 17 20:52	30°♐♑	
opposition	1653 Jan 28 12:40	9°Ω09'04	0°53'25	opposition	1659 Apr 16 22:10	26°♑46'45	2°46'24
min. Earth dist.	1653 Jan 28 08:16	9°Ω09'58	8.13396 AU	min. Earth dist.	1659 Apr 16 21:25	26°♑46'54	8.78206 AU
direct	1653 Apr 06 08:21	5°Ω39'17		direct	1659 Jun 26 15:31	23°♑22'50	
evening set	1653 Jul 21 11:30	13°Ω49'38			1659 Oct 02 03:51	0°♐	
	1653 Jul 30 17:48	15°Ω		evening set	1659 Oct 09 09:23	0°♐50'30	
conjunction	1653 Aug 08 12:08	16°Ω07'18	0°58'11	conjunction	1659 Oct 26 07:35	2°♐51'50	2°13'20
minimum elong	1653 Aug 08 12:05	16°Ω07'17	0°58'11	minimum elong	1659 Oct 26 07:36	2°♐51'50	2°13'20
max. Earth dist.	1653 Aug 08 17:33	16°Ω09'02	10.17540 AU	max. Earth dist.	1659 Oct 26 07:44	2°♐51'53	10.83110 AU
morning rise	1653 Aug 26 09:29	18°Ω23'55		morning rise	1659 Nov 12 01:56	4°♐52'01	
retrograde	1653 Dec 06 16:39	26°Ω17'01		retrograde	1660 Feb 19 13:02	11°♐58'46	
opposition	1654 Feb 11 07:41	22°Ω51'37	1°29'40	opposition	1660 Apr 28 09:54	8°♐40'48	2°39'03
min. Earth dist.	1654 Feb 11 03:46	22°Ω52'25	8.22156 AU	min. Earth dist.	1660 Apr 28 10:00	8°♐40'47	8.87944 AU



direct	1660 Jul 08 09:39	5° <del>ℓ</del> 18'12		evening set	1666 Dec 27 04:14	20° <del>♄</del> 48'13	
evening set	1660 Oct 20 11:30	12° <del>ℓ</del> 38'23					
conjunction	1660 Nov 06 06:54	14° <del>ℓ</del> 37'53	2°04'50	conjunction	1667 Jan 12 19:32	22° <del>♄</del> 45'34	0°-4'-47
minimum elong	1660 Nov 06 06:56	14° <del>ℓ</del> 37'54	2°04'49	minimum elong	1667 Jan 12 19:33	22° <del>♄</del> 45'34	0°04'48
max. Earth dist.	1660 Nov 06 05:59	14° <del>ℓ</del> 37'37	10.92111 AU	behind sun begin	1667 Jan 12 12:44	22° <del>♄</del> 43'35	
	1660 Nov 09 08:59	15° <del>ℓ</del>		behind sun end	1667 Jan 13 02:22	22° <del>♄</del> 47'34	
morning rise	1660 Nov 22 22:59	16° <del>ℓ</del> 36'25		max. Earth dist.	1667 Jan 12 13:54	22° <del>♄</del> 43'56	11.01772 AU
retrograde	1661 Mar 02 09:39	23° <del>ℓ</del> 38'44		morning rise	1667 Jan 29 11:58	24° <del>♄</del> 43'19	
opposition	1661 May 10 17:41	20° <del>ℓ</del> 21'21	2°25'15		1667 Mar 24 01:15	0° <del>≈</del>	
min. Earth dist.	1661 May 10 18:06	20° <del>ℓ</del> 21'17	8.96098 AU	retrograde	1667 May 11 15:43	1° <del>≈</del> 50'51	
direct	1661 Jul 20 22:01	16° <del>ℓ</del> 59'58			1667 Jun 30 20:04	30° <del>♄</del>	
evening set	1661 Nov 01 06:27	24° <del>ℓ</del> 13'30		opposition	1667 Jul 21 12:21	28° <del>♄</del> 31'25	0°-22'-29
				min. Earth dist.	1667 Jul 21 17:16	28° <del>♄</del> 30'30	8.98860 AU
conjunction	1661 Nov 17 23:53	26° <del>ℓ</del> 11'36	1°51'19	direct	1667 Sep 29 15:58	25° <del>♄</del> 13'09	
minimum elong	1661 Nov 17 23:55	26° <del>ℓ</del> 11'37	1°51'19		1667 Dec 18 14:54	0° <del>≈</del>	
max. Earth dist.	1661 Nov 17 22:41	26° <del>ℓ</del> 11'15	10.99366 AU	evening set	1668 Jan 07 15:35	2° <del>≈</del> 14'29	
morning rise	1661 Dec 04 14:24	28° <del>ℓ</del> 08'54		conjunction	1668 Jan 24 07:34	4° <del>≈</del> 12'47	0°-31'-45
	1661 Dec 21 01:23	0° <del>♄</del>		minimum elong	1668 Jan 24 07:33	4° <del>≈</del> 12'47	0°31'46
retrograde	1662 Mar 14 06:03	5° <del>♄</del> 08'11		max. Earth dist.	1668 Jan 24 01:02	4° <del>≈</del> 10'51	10.95486 AU
opposition	1662 May 22 22:39	1° <del>♄</del> 51'09	2°05'51	morning rise	1668 Feb 10 01:40	6° <del>≈</del> 11'44	
min. Earth dist.	1662 May 22 23:52	1° <del>♄</del> 50'55	9.02334 AU	retrograde	1668 May 22 21:38	13° <del>≈</del> 25'25	
	1662 Jun 18 11:28	30° <del>♄</del>		opposition	1668 Aug 01 20:04	10° <del>≈</del> 04'45	0°-55'-14
direct	1662 Aug 02 04:27	28° <del>ℓ</del> 30'50		min. Earth dist.	1668 Aug 02 01:24	10° <del>≈</del> 03'45	8.91618 AU
	1662 Sep 14 17:43	0° <del>♄</del>		direct	1668 Oct 10 12:31	6° <del>≈</del> 46'09	
evening set	1662 Nov 12 19:46	5° <del>♄</del> 38'43		evening set	1669 Jan 18 07:15	13° <del>≈</del> 50'41	
					1669 Jan 28 00:53	15° <del>≈</del>	
conjunction	1662 Nov 29 11:46	7° <del>♄</del> 35'52	1°33'32	conjunction	1669 Feb 04 00:21	15° <del>≈</del> 50'16	0°-57'-49
minimum elong	1662 Nov 29 11:48	7° <del>♄</del> 35'53	1°33'32	minimum elong	1669 Feb 04 00:19	15° <del>≈</del> 50'15	0°57'50
max. Earth dist.	1662 Nov 29 09:29	7° <del>♄</del> 35'11	11.04559 AU	max. Earth dist.	1669 Feb 03 18:12	15° <del>≈</del> 48'25	10.87352 AU
morning rise	1662 Dec 16 01:35	9° <del>♄</del> 32'25		morning rise	1669 Feb 20 20:19	17° <del>≈</del> 50'42	
retrograde	1663 Mar 25 23:12	16° <del>♄</del> 30'08		retrograde	1669 Jun 04 11:27	25° <del>≈</del> 11'52	
opposition	1663 Jun 04 01:31	13° <del>♄</del> 13'10	1°41'44	opposition	1669 Aug 14 07:34	21° <del>≈</del> 49'48	-1°-26'-17
min. Earth dist.	1663 Jun 04 04:29	13° <del>♄</del> 12'37	9.06370 AU	min. Earth dist.	1669 Aug 14 12:23	21° <del>≈</del> 48'54	8.82690 AU
direct	1663 Aug 14 05:16	9° <del>♄</del> 53'43		direct	1669 Oct 22 14:16	18° <del>≈</del> 30'40	
evening set	1663 Nov 24 05:24	16° <del>♄</del> 57'21		evening set	1670 Jan 30 05:00	25° <del>≈</del> 39'49	
conjunction	1663 Dec 10 20:26	18° <del>♄</del> 53'56	1°12'13	conjunction	1670 Feb 15 23:45	27° <del>≈</del> 41'01	-1°-21'-53
minimum elong	1663 Dec 10 20:28	18° <del>♄</del> 53'57	1°12'13	minimum elong	1670 Feb 15 23:43	27° <del>≈</del> 41'00	1°21'53
max. Earth dist.	1663 Dec 10 15:55	18° <del>♄</del> 52'36	11.07441 AU	max. Earth dist.	1670 Feb 15 18:58	27° <del>≈</del> 39'34	10.77679 AU
morning rise	1663 Dec 27 10:19	20° <del>♄</del> 50'12		morning rise	1670 Mar 04 21:48	29° <del>≈</del> 43'17	
retrograde	1664 Apr 05 16:47	27° <del>♄</del> 47'59			1670 Mar 07 06:23	0° <del>♄</del>	
opposition	1664 Jun 15 03:06	24° <del>♄</del> 30'50	1°13'51	retrograde	1670 Jun 17 09:12	7° <del>♄</del> 12'56	
min. Earth dist.	1664 Jun 15 07:23	24° <del>♄</del> 30'02	9.08014 AU	opposition	1670 Aug 26 23:29	3° <del>♄</del> 49'24	-1°-54'-19
direct	1664 Aug 25 04:33	21° <del>♄</del> 12'02		min. Earth dist.	1670 Aug 27 03:03	3° <del>♄</del> 48'43	8.72415 AU
evening set	1664 Dec 04 12:52	28° <del>♄</del> 12'52		direct	1670 Nov 03 17:31	0° <del>♄</del> 29'32	
	1664 Dec 19 19:50	0° <del>♄</del>		evening set	1671 Feb 11 10:14	7° <del>♄</del> 44'41	
conjunction	1664 Dec 21 03:35	0° <del>♄</del> 09'21	0°48'10	conjunction	1671 Feb 28 07:00	9° <del>♄</del> 47'48	-1°-42'-49
minimum elong	1664 Dec 21 03:37	0° <del>♄</del> 09'21	0°48'10	minimum elong	1671 Feb 28 06:58	9° <del>♄</del> 47'48	1°42'49
max. Earth dist.	1664 Dec 20 22:12	0° <del>♄</del> 07'46	11.07900 AU	max. Earth dist.	1671 Feb 28 02:45	9° <del>♄</del> 46'30	10.66844 AU
morning rise	1665 Jan 06 17:57	2° <del>♄</del> 05'44		morning rise	1671 Mar 17 07:37	11° <del>♄</del> 52'10	
retrograde	1665 Apr 17 12:41	9° <del>♄</del> 05'14		retrograde	1671 Jun 30 13:15	19° <del>♄</del> 31'02	
opposition	1665 Jun 27 04:52	5° <del>♄</del> 47'35	0°43'10	opposition	1671 Sep 08 20:44	16° <del>♄</del> 06'03	-2°-17'-53
min. Earth dist.	1665 Jun 27 09:18	5° <del>♄</del> 46'46	9.07240 AU	min. Earth dist.	1671 Sep 08 23:32	16° <del>♄</del> 05'30	8.61197 AU
direct	1665 Sep 06 01:07	2° <del>♄</del> 29'15		direct	1671 Nov 16 01:38	12° <del>♄</del> 45'17	
evening set	1665 Dec 15 19:48	9° <del>♄</del> 28'44		evening set	1672 Feb 24 00:02	20° <del>♄</del> 07'36	
conjunction	1666 Jan 01 10:43	11° <del>♄</del> 25'28	0°22'14	conjunction	1672 Mar 11 23:16	22° <del>♄</del> 12'56	-1°-59'-27
minimum elong	1666 Jan 01 10:44	11° <del>♄</del> 25'28	0°22'14	minimum elong	1672 Mar 11 23:14	22° <del>♄</del> 12'55	1°59'28
max. Earth dist.	1666 Jan 01 05:35	11° <del>♄</del> 23'58	11.05970 AU	max. Earth dist.	1672 Mar 11 19:12	22° <del>♄</del> 11'41	10.55299 AU
morning rise	1666 Jan 18 01:51	13° <del>♄</del> 22'21		morning rise	1672 Mar 29 02:58	24° <del>♄</del> 19'40	
retrograde	1666 Apr 29 11:52	20° <del>♄</del> 25'10			1672 May 22 13:24	0° <del>♄</del>	
opposition	1666 Jul 09 07:41	17° <del>♄</del> 06'44	0°10'42	retrograde	1672 Jul 13 01:14	2° <del>♄</del> 08'04	
min. Earth dist.	1666 Jul 09 11:57	17° <del>♄</del> 05'57	9.04137 AU		1672 Sep 03 20:05	30° <del>♄</del>	
direct	1666 Sep 17 20:55	13° <del>♄</del> 48'35		opposition	1672 Sep 20 23:45	28° <del>♄</del> 41'42	-2°-35'-33
desc. node	1666 Nov 08 01:58	15° <del>♄</del> 53'09					






























































































































min. Earth dist.	1672 Sep 21 02:09	28° <del>41</del> '14	8.49520 AU	conjunction	1679 Jun 19 03:14	27° <del>II</del> 44'34	0°-53'-3
direct	1672 Nov 27 16:52	25° <del>41</del> '19'53		minimum elong	1679 Jun 19 03:16	27° <del>II</del> 44'35	0°53'04
	1673 Feb 11 16:46	0° <del>Y</del>		max. Earth dist.	1679 Jun 19 08:25	27° <del>II</del> 46'15	10.01476 AU
evening set	1673 Mar 07 23:22	2° <del>Y</del> 50'14			1679 Jul 06 12:48	0° <del>U</del>	
				morning rise	1679 Jul 07 07:39	0° <del>U</del> 06'02	
conjunction	1673 Mar 25 01:50	4° <del>Y</del> 58'03	-2°-10'-40	retrograde	1679 Oct 20 16:12	8° <del>U</del> 23'27	
minimum elong	1673 Mar 25 01:49	4° <del>Y</del> 58'03	2°10'41	opposition	1679 Dec 26 10:48	4° <del>U</del> 54'33	0°-46'-27
max. Earth dist.	1673 Mar 24 22:29	4° <del>Y</del> 57'00	10.43573 AU	min. Earth dist.	1679 Dec 26 06:30	4° <del>U</del> 55'27	8.02039 AU
morning rise	1673 Apr 11 09:07	7° <del>Y</del> 07'23		direct	1680 Mar 02 05:03	1° <del>U</del> 25'42	
retrograde	1673 Jul 26 20:45	15° <del>Y</del> 05'07		evening set	1680 Jun 15 03:53	9° <del>U</del> 40'19	
opposition	1673 Oct 04 08:42	11° <del>Y</del> 37'28	-2°-45'-56				
min. Earth dist.	1673 Oct 04 10:34	11° <del>Y</del> 37'06	8.37942 AU	conjunction	1680 Jul 03 08:34	12° <del>U</del> 01'32	0°-20'-50
direct	1673 Dec 10 14:44	8° <del>Y</del> 14'30		minimum elong	1680 Jul 03 08:34	12° <del>U</del> 01'33	0°20'51
evening set	1674 Mar 21 08:44	15° <del>Y</del> 53'25		max. Earth dist.	1680 Jul 03 14:23	12° <del>U</del> 03'25	10.03298 AU
				morning rise	1680 Jul 21 13:01	14° <del>U</del> 22'38	
conjunction	1674 Apr 07 15:14	18° <del>Y</del> 03'56	-2°-15'-28	retrograde	1680 Nov 03 00:07	22° <del>U</del> 34'48	
minimum elong	1674 Apr 07 15:14	18° <del>Y</del> 03'56	2°15'29	opposition	1681 Jan 08 15:08	19° <del>U</del> 06'51	0°-5'-17
max. Earth dist.	1674 Apr 07 13:38	18° <del>Y</del> 03'26	10.32238 AU	min. Earth dist.	1681 Jan 08 10:22	19° <del>U</del> 07'50	8.05260 AU
morning rise	1674 Apr 25 02:28	20° <del>Y</del> 15'59		asc. node	1681 Feb 25 23:48	15° <del>U</del> 57'02	
retrograde	1674 Aug 09 22:51	28° <del>Y</del> 22'12		direct	1681 Mar 16 18:27	15° <del>U</del> 37'38	
opposition	1674 Oct 17 23:22	24° <del>Y</del> 53'30	-2°-47'-51	evening set	1681 Jun 30 06:59	23° <del>U</del> 51'53	
min. Earth dist.	1674 Oct 17 23:57	24° <del>Y</del> 53'22	8.27042 AU				
direct	1674 Dec 23 20:52	21° <del>Y</del> 29'21		conjunction	1681 Jul 18 11:14	26° <del>U</del> 12'12	0°12'30
evening set	1675 Apr 04 04:25	29° <del>Y</del> 16'54		minimum elong	1681 Jul 18 11:13	26° <del>U</del> 12'12	0°12'30
	1675 Apr 09 21:05	0° <del>U</del>		behind sun begin	1681 Jul 18 06:35	26° <del>U</del> 10'43	
				behind sun end	1681 Jul 18 15:52	26° <del>U</del> 13'41	
conjunction	1675 Apr 21 15:27	1° <del>U</del> 30'11	-2°-13'-5	max. Earth dist.	1681 Jul 18 17:18	26° <del>U</del> 14'09	10.07892 AU
minimum elong	1675 Apr 21 15:29	1° <del>U</del> 30'12	2°13'06	morning rise	1681 Aug 05 13:54	28° <del>U</del> 31'58	
max. Earth dist.	1675 Apr 21 15:50	1° <del>U</del> 30'19	10.21893 AU		1681 Aug 17 08:44	0° <del>U</del>	
morning rise	1675 May 09 06:52	3° <del>U</del> 44'56		retrograde	1681 Nov 17 03:06	6° <del>U</del> 37'02	
retrograde	1675 Aug 24 06:32	11° <del>U</del> 58'11		opposition	1682 Jan 22 16:21	3° <del>U</del> 10'13	0°35'43
opposition	1675 Oct 31 19:15	8° <del>U</del> 28'42	-2°-40'-31	min. Earth dist.	1682 Jan 22 11:11	3° <del>U</del> 11'17	8.11102 AU
min. Earth dist.	1675 Oct 31 18:14	8° <del>U</del> 28'55	8.17425 AU		1682 Mar 12 12:34	30° <del>R</del> <del>U</del>	
direct	1676 Jan 06 10:23	5° <del>U</del> 03'24		direct	1682 Mar 31 06:50	29° <del>U</del> 40'55	
evening set	1676 Apr 17 09:55	12° <del>U</del> 59'08			1682 Apr 19 00:03	0° <del>U</del>	
	1676 May 03 02:58	15° <del>U</del>		evening set	1682 Jul 15 06:00	7° <del>U</del> 52'42	
conjunction	1676 May 05 01:45	15° <del>U</del> 15'07	-2°-3'-10	conjunction	1682 Aug 02 08:06	10° <del>U</del> 11'17	0°44'37
minimum elong	1676 May 05 01:47	15° <del>U</del> 15'08	2°03'12	minimum elong	1682 Aug 02 08:04	10° <del>U</del> 11'16	0°44'37
max. Earth dist.	1676 May 05 03:59	15° <del>U</del> 15'50	10.13155 AU	max. Earth dist.	1682 Aug 02 14:11	10° <del>U</del> 13'14	10.14869 AU
morning rise	1676 May 22 21:25	17° <del>U</del> 32'22		morning rise	1682 Aug 20 07:20	12° <del>U</del> 28'56	
retrograde	1676 Sep 06 19:54	25° <del>U</del> 50'37			1682 Sep 10 01:56	15° <del>U</del>	
opposition	1676 Nov 13 19:43	22° <del>U</del> 20'42	-2°-23'-45	retrograde	1682 Nov 30 23:36	20° <del>U</del> 25'46	
min. Earth dist.	1676 Nov 13 17:11	22° <del>U</del> 21'13	8.09686 AU	opposition	1683 Feb 05 13:37	17° <del>U</del> 00'14	1°13'57
direct	1677 Jan 19 05:45	18° <del>U</del> 54'17		min. Earth dist.	1683 Feb 05 08:38	17° <del>U</del> 01'15	8.19078 AU
evening set	1677 May 02 00:09	26° <del>U</del> 57'14			1683 Mar 03 20:46	15° <del>R</del> <del>U</del>	
				direct	1683 Apr 14 16:21	13° <del>U</del> 31'10	
conjunction	1677 May 19 20:39	29° <del>U</del> 15'36	-1°-45'-53		1683 May 26 03:32	15° <del>U</del>	
minimum elong	1677 May 19 20:43	29° <del>U</del> 15'37	1°45'54	evening set	1683 Jul 29 22:13	21° <del>U</del> 38'44	
max. Earth dist.	1677 May 20 00:16	29° <del>U</del> 16'46	10.06578 AU				
	1677 May 25 13:18	0° <del>II</del>		conjunction	1683 Aug 16 20:47	23° <del>U</del> 54'55	1°13'41
morning rise	1677 Jun 06 20:18	1° <del>II</del> 34'59		minimum elong	1683 Aug 16 20:44	23° <del>U</del> 54'54	1°13'41
retrograde	1677 Sep 21 11:50	9° <del>II</del> 55'40		max. Earth dist.	1683 Aug 17 02:18	23° <del>U</del> 56'41	10.23674 AU
opposition	1677 Nov 27 23:29	6° <del>II</del> 25'43	-1°-58'-5	morning rise	1683 Sep 03 15:29	26° <del>U</del> 09'56	
min. Earth dist.	1677 Nov 27 20:03	6° <del>II</del> 26'25	8.04326 AU		1683 Oct 06 16:34	0° <del>U</del> <del>U</del>	
direct	1678 Feb 02 08:07	2° <del>II</del> 58'18		retrograde	1683 Dec 14 12:29	3° <del>U</del> 58'07	
evening set	1678 May 16 21:40	11° <del>II</del> 07'06		opposition	1684 Feb 19 06:04	0° <del>U</del> 33'59	1°47'11
				min. Earth dist.	1684 Feb 19 02:02	0° <del>U</del> 34'47	8.28620 AU
conjunction	1678 Jun 03 22:09	13° <del>II</del> 27'14	-1°-22'-3		1684 Feb 26 07:34	30° <del>R</del> <del>U</del>	
minimum elong	1678 Jun 03 22:13	13° <del>II</del> 27'15	1°22'03	direct	1684 Apr 27 21:48	27° <del>U</del> 05'26	
max. Earth dist.	1678 Jun 04 02:35	13° <del>II</del> 28'41	10.02593 AU		1684 Jun 26 15:58	0° <del>U</del> <del>U</del>	
morning rise	1678 Jun 22 00:53	15° <del>II</del> 48'06		evening set	1684 Aug 12 06:13	5° <del>U</del> 07'29	
retrograde	1678 Oct 06 03:28	24° <del>II</del> 08'27					
opposition	1678 Dec 12 04:59	20° <del>II</del> 38'52	-1°-24'-57	conjunction	1684 Aug 30 00:17	7° <del>U</del> 20'54	1°38'09
min. Earth dist.	1678 Dec 12 01:10	20° <del>II</del> 39'40	8.01714 AU	minimum elong	1684 Aug 30 00:14	7° <del>U</del> 20'53	1°38'09
direct	1679 Feb 16 16:27	17° <del>II</del> 10'37		max. Earth dist.	1684 Aug 30 04:33	7° <del>U</del> 22'15	10.33778 AU
evening set	1679 May 31 23:54	25° <del>II</del> 23'25		morning rise	1684 Sep 16 13:52	9° <del>U</del> 32'57	



retrograde	1684 Dec 26 17:52	17° $\mathring{M}$ 12'27			1691 Feb 14 20:16	0° $\mathring{A}$	
opposition	1685 Mar 03 17:12	13° $\mathring{M}$ 49'44	2°13'51	retrograde	1691 Mar 09 12:08	0° $\mathring{A}$ 25'56	
min. Earth dist.	1685 Mar 03 14:30	13° $\mathring{M}$ 50'16	8.39234 AU		1691 Apr 01 10:53	30° $\mathring{R}\mathring{M}$	
direct	1685 May 11 21:28	10° $\mathring{M}$ 21'57		opposition	1691 May 18 01:02	27° $\mathring{M}$ 08'18	2°14'58
evening set	1685 Aug 26 04:39	18° $\mathring{M}$ 17'20		min. Earth dist.	1691 May 18 03:11	27° $\mathring{M}$ 07'54	8.97779 AU
				direct	1691 Jul 28 06:21	23° $\mathring{M}$ 46'58	
conjunction	1685 Sep 12 17:43	20° $\mathring{M}$ 27'49	1°56'55		1691 Oct 30 18:17	0° $\mathring{A}$	
minimum elong	1685 Sep 12 17:40	20° $\mathring{M}$ 27'48	1°56'55	evening set	1691 Nov 08 05:34	0° $\mathring{A}$ 58'01	
max. Earth dist.	1685 Sep 12 20:23	20° $\mathring{M}$ 28'39	10.44713 AU				
morning rise	1685 Sep 30 02:07	22° $\mathring{M}$ 36'52		conjunction	1691 Nov 24 22:10	2° $\mathring{A}$ 55'46	1°41'44
	1685 Dec 27 13:50	0° $\mathring{A}$		minimum elong	1691 Nov 24 22:13	2° $\mathring{A}$ 55'47	1°41'44
retrograde	1686 Jan 08 15:33	0° $\mathring{A}$ 07'55		max. Earth dist.	1691 Nov 24 19:12	2° $\mathring{A}$ 54'53	11.00414 AU
	1686 Jan 20 17:38	30° $\mathring{R}\mathring{M}$		morning rise	1691 Dec 11 12:31	4° $\mathring{A}$ 52'51	
opposition	1686 Mar 16 23:03	26° $\mathring{M}$ 46'29	2°32'57	retrograde	1692 Mar 20 05:34	11° $\mathring{A}$ 51'47	
min. Earth dist.	1686 Mar 16 21:26	26° $\mathring{M}$ 46'48	8.50437 AU	opposition	1692 May 29 04:52	8° $\mathring{A}$ 34'15	1°52'46
direct	1686 May 25 15:39	23° $\mathring{M}$ 19'40		min. Earth dist.	1692 May 29 07:03	8° $\mathring{A}$ 33'51	9.02742 AU
	1686 Aug 30 05:31	0° $\mathring{A}$		direct	1692 Aug 08 10:26	5° $\mathring{A}$ 13'51	
evening set	1686 Sep 08 16:28	1° $\mathring{A}$ 07'32		evening set	1692 Nov 18 16:48	12° $\mathring{A}$ 19'59	
conjunction	1686 Sep 26 00:35	3° $\mathring{A}$ 15'06	2°09'26	conjunction	1692 Dec 05 08:25	14° $\mathring{A}$ 16'59	1°21'50
minimum elong	1686 Sep 26 00:33	3° $\mathring{A}$ 15'06	2°09'26	minimum elong	1692 Dec 05 08:28	14° $\mathring{A}$ 17'00	1°21'50
max. Earth dist.	1686 Sep 26 01:43	3° $\mathring{A}$ 15'27	10.55981 AU	max. Earth dist.	1692 Dec 05 05:40	14° $\mathring{A}$ 16'10	11.04378 AU
morning rise	1686 Oct 13 04:08	5° $\mathring{A}$ 21'15		morning rise	1692 Dec 21 22:17	16° $\mathring{A}$ 13'32	
retrograde	1687 Jan 21 05:12	12° $\mathring{A}$ 44'24		retrograde	1693 Apr 01 00:20	23° $\mathring{A}$ 11'46	
opposition	1687 Mar 29 23:22	9° $\mathring{A}$ 24'07	2°44'05	opposition	1693 Jun 10 07:09	19° $\mathring{A}$ 54'08	1°26'22
min. Earth dist.	1687 Mar 29 22:04	9° $\mathring{A}$ 24'22	8.61702 AU	min. Earth dist.	1693 Jun 10 09:24	19° $\mathring{A}$ 53'43	9.05613 AU
direct	1687 Jun 08 03:55	5° $\mathring{A}$ 58'22		direct	1693 Aug 20 11:15	16° $\mathring{A}$ 34'32	
evening set	1687 Sep 21 17:47	13° $\mathring{A}$ 38'16		evening set	1693 Nov 30 01:09	23° $\mathring{A}$ 37'02	
conjunction	1687 Oct 08 21:30	15° $\mathring{A}$ 43'07	2°15'29	conjunction	1693 Dec 16 16:11	25° $\mathring{A}$ 33'42	0°58'51
minimum elong	1687 Oct 08 21:29	15° $\mathring{A}$ 43'07	2°15'29	minimum elong	1693 Dec 16 16:13	25° $\mathring{A}$ 33'43	0°58'51
max. Earth dist.	1687 Oct 08 22:03	15° $\mathring{A}$ 43'17	10.67062 AU	max. Earth dist.	1693 Dec 16 12:57	25° $\mathring{A}$ 32'45	11.06196 AU
morning rise	1687 Oct 25 20:45	17° $\mathring{A}$ 46'39		morning rise	1694 Jan 02 06:15	27° $\mathring{A}$ 30'09	
retrograde	1688 Feb 02 13:56	25° $\mathring{A}$ 02'38			1694 Jan 24 23:15	0° $\mathring{B}$	
opposition	1688 Apr 10 18:15	21° $\mathring{A}$ 43'19	2°47'20	retrograde	1694 Apr 12 20:09	4° $\mathring{B}$ 29'10	
min. Earth dist.	1688 Apr 10 17:17	21° $\mathring{A}$ 43'30	8.72507 AU	opposition	1694 Jun 22 08:59	1° $\mathring{B}$ 11'15	0°56'44
direct	1688 Jun 20 09:04	18° $\mathring{A}$ 18'43		min. Earth dist.	1694 Jun 22 12:07	1° $\mathring{B}$ 10'41	9.06305 AU
evening set	1688 Oct 03 09:05	25° $\mathring{A}$ 50'35			1694 Jul 08 20:44	30° $\mathring{R}\mathring{A}$	
				direct	1694 Sep 01 07:18	27° $\mathring{A}$ 52'17	
conjunction	1688 Oct 20 09:04	27° $\mathring{A}$ 53'05	2°15'16		1694 Oct 23 13:26	0° $\mathring{B}$	
minimum elong	1688 Oct 20 09:04	27° $\mathring{A}$ 53'05	2°15'16	evening set	1694 Dec 11 08:12	4° $\mathring{B}$ 52'33	
max. Earth dist.	1688 Oct 20 09:19	27° $\mathring{A}$ 53'09	10.77447 AU				
morning rise	1688 Nov 06 04:42	29° $\mathring{A}$ 54'19		conjunction	1694 Dec 27 23:00	6° $\mathring{B}$ 49'15	0°33'37
	1688 Nov 06 23:56	0° $\mathring{M}$		minimum elong	1694 Dec 27 23:01	6° $\mathring{B}$ 49'16	0°33'37
retrograde	1689 Feb 13 18:03	7° $\mathring{M}$ 04'08		max. Earth dist.	1694 Dec 27 18:35	6° $\mathring{B}$ 47'57	11.05810 AU
opposition	1689 Apr 23 08:27	3° $\mathring{M}$ 45'36	2°43'06	morning rise	1695 Jan 13 13:54	8° $\mathring{B}$ 46'00	
min. Earth dist.	1689 Apr 23 08:20	3° $\mathring{M}$ 45'37	8.82372 AU	retrograde	1695 Apr 24 15:43	15° $\mathring{B}$ 47'23	
direct	1689 Jul 03 05:13	0° $\mathring{M}$ 22'09		opposition	1695 Jul 04 11:12	12° $\mathring{B}$ 28'56	0°24'54
evening set	1689 Oct 15 15:15	7° $\mathring{M}$ 46'18		min. Earth dist.	1695 Jul 04 15:07	12° $\mathring{B}$ 28'13	9.04788 AU
				direct	1695 Sep 13 03:11	9° $\mathring{B}$ 10'22	
conjunction	1689 Nov 01 12:03	9° $\mathring{M}$ 46'48	2°09'10	evening set	1695 Dec 22 15:47	16° $\mathring{B}$ 09'58	
minimum elong	1689 Nov 01 12:05	9° $\mathring{M}$ 46'49	2°09'09				
max. Earth dist.	1689 Nov 01 11:35	9° $\mathring{M}$ 46'40	10.86690 AU	conjunction	1696 Jan 08 06:49	18° $\mathring{B}$ 07'03	0°07'02
morning rise	1689 Nov 18 05:00	11° $\mathring{M}$ 46'13		minimum elong	1696 Jan 08 06:49	18° $\mathring{B}$ 07'03	0°07'02
	1689 Dec 17 14:21	15° $\mathring{M}$		behind sun begin	1696 Jan 08 00:21	18° $\mathring{B}$ 05'10	
retrograde	1690 Feb 25 16:07	18° $\mathring{M}$ 51'03		behind sun end	1696 Jan 08 13:17	18° $\mathring{B}$ 08'56	
opposition	1690 May 05 18:33	15° $\mathring{M}$ 33'04	2°32'02	max. Earth dist.	1696 Jan 08 02:03	18° $\mathring{B}$ 05'40	11.03218 AU
min. Earth dist.	1690 May 05 19:53	15° $\mathring{M}$ 32'49	8.90901 AU	morning rise	1696 Jan 24 22:47	20° $\mathring{B}$ 04'25	
	1690 May 13 03:20	15° $\mathring{R}\mathring{M}$		desc. node	1696 Apr 14 09:44	26° $\mathring{B}$ 47'36	
direct	1690 Jul 15 20:15	12° $\mathring{M}$ 10'43		retrograde	1696 May 05 16:50	27° $\mathring{B}$ 09'41	
	1690 Sep 14 17:14	15° $\mathring{M}$		opposition	1696 Jul 15 14:45	23° $\mathring{B}$ 50'30	0°-8'-6
evening set	1690 Oct 27 13:39	19° $\mathring{M}$ 27'51		min. Earth dist.	1696 Jul 15 18:26	23° $\mathring{B}$ 49'49	9.01108 AU
				direct	1696 Sep 23 23:36	20° $\mathring{B}$ 32'09	
conjunction	1690 Nov 13 07:56	21° $\mathring{M}$ 26'45	1°57'45	evening set	1697 Jan 02 01:27	27° $\mathring{B}$ 32'33	
minimum elong	1690 Nov 13 07:58	21° $\mathring{M}$ 26'45	1°57'45				
max. Earth dist.	1690 Nov 13 05:47	21° $\mathring{M}$ 26'06	10.94442 AU	conjunction	1697 Jan 18 17:11	29° $\mathring{B}$ 30'22	0°-20'-6
morning rise	1690 Nov 29 23:13	23° $\mathring{M}$ 24'47		minimum elong	1697 Jan 18 17:10	29° $\mathring{B}$ 30'22	0°20'08



max. Earth dist.	1697 Jan 18 13:16	29°  29'13	10.98507 AU	minimum elong	1703 Apr 02 23:35	12°  28'49	2°14'02
	1697 Jan 22 20:53	0° 		max. Earth dist.	1703 Apr 02 21:38	12°  28'13	10.40251 AU
morning rise	1697 Feb 04 10:24	1°  28'43		morning rise	1703 Apr 20 08:40	14°  39'12	
retrograde	1697 May 17 22:30	8°  39'21		retrograde	1703 Aug 05 01:37	22°  40'11	
opposition	1697 Jul 27 20:54	5°  19'13	0°-41'-9	opposition	1703 Oct 13 07:02	19°  12'39	-2°-47'-46
min. Earth dist.	1697 Jul 27 23:52	5°  18'40	8.95398 AU	min. Earth dist.	1703 Oct 13 07:48	19°  12'30	8.34788 AU
direct	1697 Oct 05 19:09	2°  00'53		direct	1703 Dec 19 08:03	15°  49'46	
evening set	1698 Jan 13 14:53	9°  03'34		evening set	1704 Mar 29 09:10	23°  31'57	
conjunction	1698 Jan 30 07:30	11°  02'28	0°-46'-40	conjunction	1704 Apr 15 17:45	25°  43'33	-2°-14'-53
minimum elong	1698 Jan 30 07:29	11°  02'27	0°46'41	minimum elong	1704 Apr 15 17:46	25°  43'33	2°14'55
max. Earth dist.	1698 Jan 30 03:42	11°  01'20	10.91851 AU	max. Earth dist.	1704 Apr 15 16:04	25°  43'01	10.29263 AU
morning rise	1698 Feb 16 02:25	13°  02'06		morning rise	1704 May 03 07:04	27°  56'39	
	1698 Mar 05 10:42	15° 			1704 May 20 06:32	0° 	
retrograde	1698 May 30 10:10	20°  19'25		retrograde	1704 Aug 18 06:09	6°  05'27	
opposition	1698 Aug 09 06:29	16°  58'12	-1°-13'-2	opposition	1704 Oct 25 23:51	2°  36'57	-2°-44'-39
min. Earth dist.	1698 Aug 09 09:22	16°  57'39	8.87870 AU	min. Earth dist.	1704 Oct 26 00:19	2°  36'51	8.24299 AU
	1698 Sep 06 10:28	15° 			1704 Dec 02 03:22	30° 	
direct	1698 Oct 17 17:21	13°  39'37		direct	1704 Dec 31 17:11	29°  12'47	
	1698 Nov 26 20:00	15° 			1705 Jan 29 23:13	0° 	
evening set	1699 Jan 25 09:48	20°  46'05		evening set	1705 Apr 12 09:17	7°  03'27	
conjunction	1699 Feb 11 03:36	22°  46'22	-1°-11'-41	conjunction	1705 Apr 29 22:34	9°  17'49	-2°-8'-23
minimum elong	1699 Feb 11 03:34	22°  46'22	1°11'42	minimum elong	1705 Apr 29 22:37	9°  17'50	2°08'25
max. Earth dist.	1699 Feb 10 23:11	22°  45'02	10.83500 AU	max. Earth dist.	1705 Apr 29 21:58	9°  17'37	10.19444 AU
morning rise	1699 Feb 28 00:39	24°  47'38		morning rise	1705 May 17 16:17	11°  33'35	
	1699 Apr 19 23:19	0° 			1705 Jun 15 15:03	15° 	
retrograde	1699 Jun 12 03:15	2°  12'43		retrograde	1705 Sep 01 16:02	19°  48'23	
	1699 Aug 06 03:11	30° 		opposition	1705 Nov 08 21:22	16°  19'11	-2°-32'-11
opposition	1699 Aug 21 20:03	28°  50'18	-1°-42'-27	min. Earth dist.	1705 Nov 08 21:09	16°  19'14	8.15297 AU
min. Earth dist.	1699 Aug 21 23:20	28°  49'40	8.78808 AU		1705 Nov 25 13:07	15° 	
direct	1699 Oct 29 18:24	25°  31'14		direct	1706 Jan 14 09:21	12°  53'43	
	1700 Jan 13 12:20	0° 			1706 Mar 03 22:03	15° 	
evening set	1700 Feb 06 11:21	2°  42'54		evening set	1706 Apr 26 18:38	20°  52'11	
conjunction	1700 Feb 23 06:54	4°  44'53	-1°-34'-3	conjunction	1706 May 14 12:48	23°  09'08	-1°-54'-27
minimum elong	1700 Feb 23 06:51	4°  44'52	1°34'04	minimum elong	1706 May 14 12:52	23°  09'09	1°54'28
max. Earth dist.	1700 Feb 23 02:54	4°  43'40	10.73772 AU	max. Earth dist.	1706 May 14 13:47	23°  09'26	10.11427 AU
morning rise	1700 Mar 12 06:18	6°  48'02		morning rise	1706 Jun 01 10:41	25°  27'16	
retrograde	1700 Jun 25 02:36	14°  21'47			1706 Jul 10 13:33	0° 	
opposition	1700 Sep 03 14:37	10°  58'03	-2°-8'-2	retrograde	1706 Sep 16 04:52	3°  11'45'47	
min. Earth dist.	1700 Sep 03 17:31	10°  57'30	8.68559 AU	opposition	1706 Nov 22 22:42	0°  16'12	-2°-10'-34
direct	1700 Nov 11 01:26	7°  38'19		min. Earth dist.	1706 Nov 22 21:21	0°  16'28	8.08358 AU
evening set	1701 Feb 18 20:38	14°  56'20			1706 Nov 26 05:46	30° 	
				direct	1707 Jan 28 09:10	26°  49'29	
conjunction	1701 Mar 07 18:34	17°  00'20	-1°-52'-38		1707 Mar 29 18:29	0° 	
minimum elong	1701 Mar 07 18:32	17°  00'20	1°52'39	evening set	1707 May 11 11:46	4°  11'54'34	
max. Earth dist.	1701 Mar 07 15:50	16°  59'30	10.63038 AU				
morning rise	1701 Mar 24 20:40	19°  05'39		conjunction	1707 May 29 10:25	7°  13'38	-1°-33'-34
retrograde	1701 Jul 08 10:51	26°  48'37		minimum elong	1707 May 29 10:28	7°  13'39	1°33'35
opposition	1701 Sep 16 14:29	23°  23'31	-2°-28'-21	max. Earth dist.	1707 May 29 13:19	7°  14'34	10.05726 AU
min. Earth dist.	1701 Sep 16 16:23	23°  23'08	8.57511 AU	morning rise	1707 Jun 16 11:42	9°  13'36	
direct	1701 Nov 23 13:54	20°  02'53		retrograde	1707 Sep 30 18:43	17°  11'53'17	
evening set	1702 Mar 03 15:02	27°  28'16		opposition	1707 Dec 07 02:28	14°  11'23'38	-1°-40'-48
				min. Earth dist.	1707 Dec 06 23:38	14°  11'24'13	8.03932 AU
conjunction	1702 Mar 20 15:56	29°  34'35	-2°-6'-18	direct	1708 Feb 11 14:26	10°  11'55'50	
minimum elong	1702 Mar 20 15:55	29°  34'34	2°06'19	evening set	1708 May 25 10:48	19°  11'05'53	
max. Earth dist.	1702 Mar 20 14:03	29°  33'59	10.51711 AU				
	1702 Mar 24 01:38	0° 		conjunction	1708 Jun 12 13:00	21°  11'26'26	-1°-6'-50
morning rise	1702 Apr 06 21:14	1°  42'18		minimum elong	1708 Jun 12 13:03	21°  11'26'26	1°06'52
retrograde	1702 Jul 22 03:00	9°  34'29		max. Earth dist.	1708 Jun 12 17:23	21°  11'27'51	10.02714 AU
opposition	1702 Sep 29 19:48	6°  08'05	-2°-42'00	morning rise	1708 Jun 30 16:38	23°  11'47'28	
min. Earth dist.	1702 Sep 29 20:55	6°  07'52	8.46083 AU		1708 Aug 26 13:29	0° 	
direct	1702 Dec 06 06:59	2°  46'23		retrograde	1708 Oct 14 07:51	2°  05'05'39	
evening set	1703 Mar 16 19:09	10°  41'58			1708 Dec 02 22:58	30° 	
				opposition	1708 Dec 20 07:11	28°  11'36'19	-1°-4'-38
conjunction	1703 Apr 02 23:36	12°  41'28'50	-2°-14'-1	min. Earth dist.	1708 Dec 20 03:26	28°  11'37'05	8.02312 AU



direct	1709 Feb 24 23:17	25°II07'36		opposition	1715 Mar 12 04:28	21°mp00'39	2°24'56
	1709 May 12 21:00	0°☾		min. Earth dist.	1715 Mar 12 00:47	21°mp01'23	8.44315 AU
evening set	1709 Jun 09 13:14	3°☾20'43		direct	1715 May 20 16:13	17°mp32'56	
				evening set	1715 Sep 03 19:00	25°mp24'18	
conjunction	1709 Jun 27 17:35	5°☾41'52	0°-35'-58	conjunction	1715 Sep 21 05:40	27°mp33'17	2°04'18
minimum elong	1709 Jun 27 17:37	5°☾41'53	0°35'59	minimum elong	1715 Sep 21 05:38	27°mp33'17	2°04'18
max. Earth dist.	1709 Jun 27 22:43	5°☾43'32	10.02575 AU	max. Earth dist.	1715 Sep 21 09:23	27°mp34'26	10.50010 AU
morning rise	1709 Jul 15 22:03	8°☾03'05		morning rise	1715 Oct 08 11:27	29°mp40'49	
retrograde	1709 Oct 28 18:31	16°☾17'20			1715 Oct 11 02:54	0°☾	
opposition	1710 Jan 03 11:26	12°☾48'38	0°-24'-31	retrograde	1716 Jan 16 17:57	7°☾07'33	
min. Earth dist.	1710 Jan 03 07:22	12°☾49'29	8.03583 AU	opposition	1716 Mar 24 07:03	3°☾46'21	2°39'48
direct	1710 Mar 11 09:54	9°☾19'15		min. Earth dist.	1716 Mar 24 04:29	3°☾46'52	8.55911 AU
evening set	1710 Jun 24 16:15	17°☾33'22		direct	1716 Jun 02 06:09	0°☾19'48	
				evening set	1716 Sep 16 01:09	8°☾03'20	
conjunction	1710 Jul 12 20:54	19°☾54'09	0°-3'-3	conjunction	1716 Oct 03 07:03	10°☾09'28	2°13'22
minimum elong	1710 Jul 12 20:56	19°☾54'10	0°03'04	minimum elong	1716 Oct 03 07:01	10°☾09'28	2°13'22
behind sun begin	1710 Jul 12 13:35	19°☾51'48		max. Earth dist.	1716 Oct 03 09:30	10°☾10'14	10.61557 AU
behind sun end	1710 Jul 13 04:16	19°☾56'31		morning rise	1716 Oct 20 08:12	12°☾14'12	
max. Earth dist.	1710 Jul 13 02:12	19°☾55'50	10.05284 AU	retrograde	1717 Jan 28 05:02	19°☾33'20	
morning rise	1710 Jul 31 00:28	22°☾14'35		opposition	1717 Apr 06 04:14	16°☾13'24	2°46'41
asc. node	1710 Aug 16 05:19	24°☾14'49		min. Earth dist.	1717 Apr 06 02:59	16°☾13'39	8.67327 AU
	1710 Oct 22 18:48	0°♈		direct	1717 Jun 15 13:34	12°☾48'07	
retrograde	1710 Nov 12 00:33	0°♈22'52		evening set	1717 Sep 28 21:08	20°☾23'39	
	1710 Dec 02 05:25	30°♈☾		conjunction	1717 Oct 15 22:44	22°☾27'13	2°16'02
opposition	1711 Jan 17 13:37	26°☾55'07	0°16'48	minimum elong	1717 Oct 15 22:44	22°☾27'13	2°16'02
min. Earth dist.	1711 Jan 17 09:44	26°☾55'55	8.07645 AU	max. Earth dist.	1717 Oct 15 23:29	22°☾27'27	10.72667 AU
direct	1711 Mar 25 22:15	23°☾25'22		morning rise	1717 Nov 01 20:04	24°☾29'29	
	1711 Jun 26 10:44	0°♈			1717 Dec 26 14:44	0°♈	
evening set	1711 Jul 09 16:46	1°♈38'21		retrograde	1718 Feb 09 10:10	1°♈41'57	
					1718 Mar 27 17:23	30°♈☾	
conjunction	1711 Jul 27 20:01	3°♈57'52	0°29'52	opposition	1718 Apr 18 20:35	28°☾23'05	2°45'51
minimum elong	1711 Jul 27 19:59	3°♈57'51	0°29'53	min. Earth dist.	1718 Apr 18 20:03	28°☾23'11	8.78042 AU
max. Earth dist.	1711 Jul 28 00:54	3°♈59'26	10.10653 AU	direct	1718 Jun 28 13:58	24°☾59'09	
morning rise	1711 Aug 14 21:02	6°♈16'38			1718 Sep 19 15:29	0°♈	
retrograde	1711 Nov 25 23:14	14°♈17'27		evening set	1718 Oct 11 07:23	2°♈26'48	
opposition	1712 Jan 31 12:29	10°♈50'51	0°56'34	conjunction	1718 Oct 28 05:31	4°♈28'10	2°12'37
min. Earth dist.	1712 Jan 31 08:50	10°♈51'36	8.14226 AU	minimum elong	1718 Oct 28 05:32	4°♈28'10	2°12'36
direct	1712 Apr 08 09:37	7°♈21'06		max. Earth dist.	1718 Oct 28 05:21	4°♈28'07	10.82852 AU
	1712 Jul 19 08:37	15°♈		morning rise	1718 Nov 13 23:49	6°♈28'22	
evening set	1712 Jul 23 12:01	15°♈30'57		retrograde	1719 Feb 21 10:50	13°♈35'20	
				opposition	1719 May 01 08:28	10°♈17'17	2°37'52
conjunction	1712 Aug 10 12:20	17°♈48'24	1°00'33	min. Earth dist.	1719 May 01 08:04	10°♈17'22	8.87592 AU
minimum elong	1712 Aug 10 12:18	17°♈48'23	1°00'34	direct	1719 Jul 11 08:57	6°♈54'40	
max. Earth dist.	1712 Aug 10 16:39	17°♈49'47	10.18324 AU	evening set	1719 Oct 23 09:26	14°♈14'59	
morning rise	1712 Aug 28 09:30	20°♈04'49			1719 Oct 29 18:34	15°♈	
retrograde	1712 Dec 08 14:09	27°♈57'16		conjunction	1719 Nov 09 04:56	16°♈14'32	2°03'36
opposition	1713 Feb 13 06:59	24°♈31'58	1°32'21	minimum elong	1719 Nov 09 04:58	16°♈14'33	2°03'36
min. Earth dist.	1713 Feb 13 03:14	24°♈32'43	8.22891 AU	max. Earth dist.	1719 Nov 09 04:39	16°♈14'27	10.91682 AU
direct	1713 Apr 22 17:59	21°♈02'34		morning rise	1719 Nov 25 20:56	18°♈13'07	
evening set	1713 Aug 06 23:56	29°♈07'32		retrograde	1720 Mar 04 09:45	25°♈15'46	
	1713 Aug 13 23:48	0°mp		opposition	1720 May 12 16:30	21°♈58'20	2°23'29
conjunction	1713 Aug 24 20:10	1°mp22'23	1°27'18	min. Earth dist.	1720 May 12 16:54	21°♈58'15	8.95587 AU
minimum elong	1713 Aug 24 20:07	1°mp22'22	1°27'19	direct	1720 Jul 22 20:30	18°♈36'57	
max. Earth dist.	1713 Aug 25 00:12	1°mp23'39	10.27809 AU	evening set	1720 Nov 03 04:36	25°♈50'41	
morning rise	1713 Sep 11 12:27	3°mp35'57		conjunction	1720 Nov 19 22:03	27°♈48'53	1°49'39
retrograde	1713 Dec 21 22:11	11°mp19'40		minimum elong	1720 Nov 19 22:06	27°♈48'54	1°49'39
opposition	1714 Feb 26 20:22	7°mp55'44	2°02'14	max. Earth dist.	1720 Nov 19 20:52	27°♈48'32	10.98795 AU
min. Earth dist.	1714 Feb 26 16:30	7°mp56'30	8.33110 AU	morning rise	1720 Dec 06 12:37	29°♈46'18	
direct	1714 May 06 20:22	4°mp27'02			1720 Dec 08 12:00	0°♈	
evening set	1714 Aug 21 02:37	12°mp25'42		retrograde	1721 Mar 16 04:30	6°♈45'58	
				opposition	1721 May 24 21:50	3°♈28'54	2°03'34
conjunction	1714 Sep 07 18:09	14°mp37'39	1°48'50				
minimum elong	1714 Sep 07 18:06	14°mp37'38	1°48'50				
max. Earth dist.	1714 Sep 07 22:07	14°mp38'54	10.38565 AU				
morning rise	1714 Sep 25 05:07	16°mp48'11					
retrograde	1715 Jan 04 00:14	24°mp23'12					



min. Earth dist.	1721 May 24 23:40	3°♂28'33	9.01710 AU		1727 Jun 09 12:18	15°♂	
direct	1721 Aug 04 01:38	0°♂08'34		opposition	1727 Aug 04 21:54	11°♂49'26	0°-58'-29
evening set	1721 Nov 14 18:14	7°♂16'47		min. Earth dist.	1727 Aug 05 02:47	11°♂48'31	8.90921 AU
				direct	1727 Oct 13 15:07	8°♂30'51	
conjunction	1721 Dec 01 10:10	9°♂14'01	1°31'28		1728 Jan 16 05:26	15°♂	
minimum elong	1721 Dec 01 10:12	9°♂14'02	1°31'28	evening set	1728 Jan 21 08:19	15°♂35'49	
max. Earth dist.	1721 Dec 01 07:14	9°♂13'09	11.03905 AU				
morning rise	1721 Dec 18 00:10	11°♂10'42		conjunction	1728 Feb 07 01:37	17°♂35'32	-1°00'-21
retrograde	1722 Mar 27 22:20	18°♂08'56		minimum elong	1728 Feb 07 01:35	17°♂35'32	1°00'22
opposition	1722 Jun 06 01:09	14°♂51'55	1°39'01	max. Earth dist.	1728 Feb 06 20:29	17°♂34'00	10.86658 AU
min. Earth dist.	1722 Jun 06 04:17	14°♂51'20	9.05697 AU	morning rise	1728 Feb 23 21:36	19°♂36'07	
direct	1722 Aug 16 05:15	11°♂32'27		retrograde	1728 Jun 06 14:58	26°♂57'54	
evening set	1722 Nov 26 04:05	18°♂36'25		opposition	1728 Aug 16 09:43	23°♂35'48	-1°-29'-15
				min. Earth dist.	1728 Aug 16 13:37	23°♂35'04	8.82016 AU
conjunction	1722 Dec 12 19:12	20°♂33'07	1°09'49	direct	1728 Oct 24 14:52	20°♂16'40	
minimum elong	1722 Dec 12 19:14	20°♂33'07	1°09'50	evening set	1729 Feb 01 06:43	27°♂26'16	
max. Earth dist.	1722 Dec 12 14:59	20°♂31'52	11.06768 AU				
morning rise	1722 Dec 29 09:14	22°♂29'30		conjunction	1729 Feb 18 01:33	29°♂27'35	-1°-24'-7
retrograde	1723 Apr 08 16:57	29°♂27'49		minimum elong	1729 Feb 18 01:31	29°♂27'34	1°24'08
opposition	1723 Jun 18 03:06	26°♂10'35	1°10'48	max. Earth dist.	1729 Feb 17 21:04	29°♂26'13	10.77021 AU
min. Earth dist.	1723 Jun 18 06:39	26°♂09'56	9.07338 AU		1729 Feb 22 12:25	0°♂	
direct	1723 Aug 28 04:11	22°♂51'48		morning rise	1729 Mar 06 23:42	1°♂29'58	
evening set	1723 Dec 07 11:49	29°♂52'57		retrograde	1729 Jun 19 12:07	9°♂00'12	
	1723 Dec 08 12:17	0°♂		opposition	1729 Aug 29 02:11	5°♂36'37	-1°-56'-49
				min. Earth dist.	1729 Aug 29 05:21	5°♂36'01	8.71793 AU
conjunction	1723 Dec 24 02:45	1°♂49'33	0°45'33	direct	1729 Nov 05 18:53	2°♂16'44	
minimum elong	1723 Dec 24 02:46	1°♂49'33	0°45'33	evening set	1730 Feb 13 12:30	9°♂32'18	
max. Earth dist.	1723 Dec 23 22:22	1°♂48'15	11.07220 AU				
morning rise	1724 Jan 09 17:08	3°♂46'03		conjunction	1730 Mar 02 09:17	11°♂35'32	-1°-44'-37
retrograde	1724 Apr 19 13:44	10°♂46'08		minimum elong	1730 Mar 02 09:14	11°♂35'31	1°44'38
opposition	1724 Jun 29 05:13	7°♂28'25	0°39'52	max. Earth dist.	1730 Mar 02 04:40	11°♂34'07	10.66260 AU
min. Earth dist.	1724 Jun 29 08:59	7°♂27'43	9.06551 AU	morning rise	1730 Mar 19 10:08	13°♂40'01	
direct	1724 Sep 08 00:53	4°♂10'05		retrograde	1730 Jul 02 17:08	21°♂19'23	
evening set	1724 Dec 17 19:17	11°♂09'56		opposition	1730 Sep 10 23:52	17°♂54'20	-2°-19'-48
				min. Earth dist.	1730 Sep 11 02:55	17°♂53'45	8.60661 AU
conjunction	1725 Jan 03 10:16	13°♂06'48	0°19'28	direct	1730 Nov 18 04:11	14°♂33'31	
minimum elong	1725 Jan 03 10:16	13°♂06'48	0°19'28	evening set	1731 Feb 26 02:51	21°♂56'11	
max. Earth dist.	1725 Jan 03 05:20	13°♂05'22	11.05271 AU				
morning rise	1725 Jan 20 01:30	15°♂03'49		conjunction	1731 Mar 15 02:14	24°♂01'38	-2°00'-43
retrograde	1725 May 01 13:49	22°♂07'12		minimum elong	1731 Mar 15 02:12	24°♂01'37	2°00'44
opposition	1725 Jul 11 08:32	18°♂48'45	0°07'17	max. Earth dist.	1731 Mar 14 22:09	24°♂00'22	10.54817 AU
min. Earth dist.	1725 Jul 11 12:57	18°♂47'57	9.03431 AU	morning rise	1731 Apr 01 06:12	26°♂08'29	
direct	1725 Sep 19 20:08	15°♂30'37			1731 May 05 12:46	0°♂	
desc. node	1725 Oct 02 05:00	15°♂38'10		retrograde	1731 Jul 16 04:51	3°♂57'14	
evening set	1725 Dec 29 04:14	22°♂30'40		opposition	1731 Sep 24 02:59	0°♂30'48	-2°-36'-45
				min. Earth dist.	1731 Sep 24 05:36	0°♂30'17	8.49099 AU
conjunction	1726 Jan 14 19:30	24°♂28'08	0°-7'-34		1731 Sep 30 17:01	30°♂	
minimum elong	1726 Jan 14 19:30	24°♂28'08	0°07'35	direct	1731 Nov 30 19:22	27°♂08'55	
behind sun begin	1726 Jan 14 13:09	24°♂26'17			1732 Jan 27 18:51	0°♂	
behind sun end	1726 Jan 15 01:51	24°♂30'00		evening set	1732 Mar 10 02:34	4°♂39'34	
max. Earth dist.	1726 Jan 14 13:20	24°♂26'20	11.01062 AU				
morning rise	1726 Jan 31 12:09	26°♂26'02		conjunction	1732 Mar 27 05:19	6°♂47'29	-2°-11'-18
	1726 Mar 05 18:23	0°♂		minimum elong	1732 Mar 27 05:18	6°♂47'29	2°11'19
retrograde	1726 May 13 15:45	3°♂34'13		max. Earth dist.	1732 Mar 27 02:48	6°♂46'41	10.43210 AU
opposition	1726 Jul 23 13:48	0°♂14'44	0°-25'-53	morning rise	1732 Apr 13 12:45	8°♂56'53	
min. Earth dist.	1726 Jul 23 19:01	0°♂13'46	8.98152 AU	retrograde	1732 Jul 28 23:28	16°♂54'50	
	1726 Jul 26 21:24	30°♂		opposition	1732 Oct 06 12:01	13°♂27'07	-2°-46'-18
direct	1726 Oct 01 15:42	26°♂56'30		min. Earth dist.	1732 Oct 06 13:27	13°♂26'50	8.37649 AU
	1726 Dec 03 04:32	0°♂		direct	1732 Dec 12 18:47	10°♂04'05	
evening set	1727 Jan 09 16:01	3°♂58'17		evening set	1733 Mar 23 12:11	17°♂43'10	
conjunction	1727 Jan 26 08:07	5°♂56'42	0°-34'-29	conjunction	1733 Apr 09 18:59	19°♂53'47	-2°-15'-25
minimum elong	1727 Jan 26 08:05	5°♂56'42	0°34'30	minimum elong	1733 Apr 09 19:00	19°♂53'47	2°15'26
max. Earth dist.	1727 Jan 26 01:58	5°♂54'53	10.94781 AU	max. Earth dist.	1733 Apr 09 18:25	19°♂53'36	10.32009 AU
morning rise	1727 Feb 12 02:22	7°♂55'47		morning rise	1733 Apr 27 06:21	22°♂05'53	
	1727 May 11 14:49	15°♂			1733 Jul 27 21:16	0°♂	
retrograde	1727 May 26 00:05	15°♂10'09		retrograde	1733 Aug 12 02:00	0°♂12'10	



	1733 Aug 27 08:42	30° $\mathbb{R}$ $\mathbb{Y}$		asc. node	1740 Jan 26 23:17	19° $\mathbb{E}$ 38'26	
opposition	1733 Oct 20 02:40	26° $\mathbb{Y}$ 43'22	-2°-47'-20	direct	1740 Mar 18 20:18	17° $\mathbb{E}$ 23'13	
min. Earth dist.	1733 Oct 20 02:26	26° $\mathbb{Y}$ 43'25	8.26888 AU	evening set	1740 Jul 02 09:19	25° $\mathbb{E}$ 37'11	
direct	1733 Dec 26 00:28	23° $\mathbb{Y}$ 19'10					
	1734 Mar 28 08:17	0° $\mathbb{X}$		conjunction	1740 Jul 20 13:31	27° $\mathbb{E}$ 57'23	0°15'21
evening set	1734 Apr 06 08:08	1° $\mathbb{X}$ 06'45		minimum elong	1740 Jul 20 13:30	27° $\mathbb{E}$ 57'23	0°15'21
				behind sun begin	1740 Jul 20 11:47	27° $\mathbb{E}$ 56'50	
conjunction	1734 Apr 23 19:27	3° $\mathbb{X}$ 20'07	-2°-12'-19	behind sun end	1740 Jul 20 15:14	27° $\mathbb{E}$ 57'56	
minimum elong	1734 Apr 23 19:28	3° $\mathbb{X}$ 20'08	2°12'21	max. Earth dist.	1740 Jul 20 20:19	27° $\mathbb{E}$ 59'35	10.08402 AU
max. Earth dist.	1734 Apr 23 20:11	3° $\mathbb{X}$ 20'21	10.21810 AU		1740 Aug 05 10:16	0° $\mathbb{J}$	
morning rise	1734 May 11 11:04	5° $\mathbb{X}$ 34'55		morning rise	1740 Aug 07 15:53	0° $\mathbb{J}$ 17'01	
retrograde	1734 Aug 26 11:14	13° $\mathbb{X}$ 48'01		retrograde	1740 Nov 19 04:27	8° $\mathbb{J}$ 21'34	
opposition	1734 Nov 02 22:24	10° $\mathbb{X}$ 18'28	-2°-39'-8	opposition	1741 Jan 24 17:20	4° $\mathbb{J}$ 54'51	0°39'09
min. Earth dist.	1734 Nov 02 20:59	10° $\mathbb{X}$ 18'45	8.17413 AU	min. Earth dist.	1741 Jan 24 11:51	4° $\mathbb{J}$ 55'58	8.11647 AU
direct	1735 Jan 08 12:10	6° $\mathbb{X}$ 53'04		direct	1741 Apr 02 08:24	1° $\mathbb{J}$ 25'36	
evening set	1735 Apr 20 13:46	14° $\mathbb{X}$ 48'45		evening set	1741 Jul 17 07:56	9° $\mathbb{J}$ 37'06	
	1735 Apr 22 01:17	15° $\mathbb{X}$					
				conjunction	1741 Aug 04 09:53	11° $\mathbb{J}$ 55'32	0°47'15
conjunction	1735 May 08 05:47	17° $\mathbb{X}$ 04'46	-2°-1'-44	minimum elong	1741 Aug 04 09:51	11° $\mathbb{J}$ 55'31	0°47'15
minimum elong	1735 May 08 05:50	17° $\mathbb{X}$ 04'47	2°01'45	max. Earth dist.	1741 Aug 04 16:31	11° $\mathbb{J}$ 57'39	10.15457 AU
max. Earth dist.	1735 May 08 07:34	17° $\mathbb{X}$ 05'21	10.13214 AU	morning rise	1741 Aug 22 08:47	14° $\mathbb{J}$ 13'01	
morning rise	1735 May 26 01:44	19° $\mathbb{X}$ 22'05			1741 Aug 28 15:40	15° $\mathbb{J}$	
retrograde	1735 Sep 10 00:16	27° $\mathbb{X}$ 39'56		retrograde	1741 Dec 03 00:07	22° $\mathbb{J}$ 09'20	
opposition	1735 Nov 16 22:39	24° $\mathbb{X}$ 10'00	-2°-21'-33	opposition	1742 Feb 07 14:18	18° $\mathbb{J}$ 43'55	1°17'00
min. Earth dist.	1735 Nov 16 20:24	24° $\mathbb{X}$ 10'27	8.09806 AU	min. Earth dist.	1742 Feb 07 09:33	18° $\mathbb{J}$ 44'53	8.19719 AU
direct	1736 Jan 22 08:39	20° $\mathbb{X}$ 43'28		direct	1742 Apr 16 17:38	15° $\mathbb{J}$ 14'53	
evening set	1736 May 04 03:49	28° $\mathbb{X}$ 46'19		evening set	1742 Jul 31 23:46	23° $\mathbb{J}$ 22'06	
	1736 May 13 17:15	0° $\mathbb{I}$					
				conjunction	1742 Aug 18 21:59	25° $\mathbb{J}$ 38'05	1°15'56
conjunction	1736 May 22 00:27	1° $\mathbb{I}$ 04'39	-1°-43'-51	minimum elong	1742 Aug 18 21:56	25° $\mathbb{J}$ 38'05	1°15'57
minimum elong	1736 May 22 00:31	1° $\mathbb{I}$ 04'40	1°43'53	max. Earth dist.	1742 Aug 19 03:21	25° $\mathbb{J}$ 39'48	10.24362 AU
max. Earth dist.	1736 May 22 03:13	1° $\mathbb{I}$ 05'33	10.06766 AU	morning rise	1742 Sep 05 16:20	27° $\mathbb{J}$ 52'53	
morning rise	1736 Jun 09 00:23	3° $\mathbb{I}$ 24'03			1742 Sep 23 05:05	0° $\mathbb{P}$	
retrograde	1736 Sep 23 14:27	11° $\mathbb{I}$ 44'13		retrograde	1742 Dec 16 12:39	5° $\mathbb{P}$ 40'31	
opposition	1736 Nov 30 02:08	8° $\mathbb{I}$ 14'16	-1°-55'-14	opposition	1743 Feb 21 06:23	2° $\mathbb{P}$ 16'28	1°49'41
min. Earth dist.	1736 Nov 29 23:21	8° $\mathbb{I}$ 14'51	8.04568 AU	min. Earth dist.	1743 Feb 21 03:00	2° $\mathbb{P}$ 17'09	8.29350 AU
direct	1737 Feb 04 12:02	4° $\mathbb{I}$ 46'45			1743 Mar 24 04:23	30° $\mathbb{R}$ $\mathbb{J}$	
evening set	1737 May 19 01:04	12° $\mathbb{I}$ 55'21		direct	1743 Apr 30 22:10	28° $\mathbb{J}$ 47'58	
					1743 Jun 07 11:32	0° $\mathbb{P}$	
conjunction	1737 Jun 06 01:43	15° $\mathbb{I}$ 15'27	-1°-19'-33	evening set	1743 Aug 15 07:05	6° $\mathbb{P}$ 49'33	
minimum elong	1737 Jun 06 01:46	15° $\mathbb{I}$ 15'28	1°19'34				
max. Earth dist.	1737 Jun 06 05:30	15° $\mathbb{I}$ 16'41	10.02896 AU	conjunction	1743 Sep 02 00:42	9° $\mathbb{P}$ 02'46	1°39'54
morning rise	1737 Jun 24 04:39	17° $\mathbb{I}$ 36'17		minimum elong	1743 Sep 02 00:39	9° $\mathbb{P}$ 02'45	1°39'55
retrograde	1737 Oct 08 04:36	25° $\mathbb{I}$ 56'03		max. Earth dist.	1743 Sep 02 04:07	9° $\mathbb{P}$ 03'50	10.34511 AU
opposition	1737 Dec 14 07:12	22° $\mathbb{I}$ 26'30	-1°-21'-36	morning rise	1743 Sep 19 14:01	11° $\mathbb{P}$ 14'37	
min. Earth dist.	1737 Dec 14 03:47	22° $\mathbb{I}$ 27'12	8.02060 AU	retrograde	1743 Dec 29 17:24	18° $\mathbb{P}$ 53'35	
direct	1738 Feb 18 20:13	18° $\mathbb{I}$ 58'10		opposition	1744 Mar 05 17:06	15° $\mathbb{P}$ 30'56	2°15'41
evening set	1738 Jun 03 03:00	27° $\mathbb{I}$ 10'42		min. Earth dist.	1744 Mar 05 14:52	15° $\mathbb{P}$ 31'23	8.39960 AU
				direct	1744 May 13 22:01	12° $\mathbb{P}$ 03'12	
conjunction	1738 Jun 21 06:30	29° $\mathbb{I}$ 31'47	0°-50'-15	evening set	1744 Aug 28 04:44	19° $\mathbb{P}$ 58'09	
minimum elong	1738 Jun 21 06:32	29° $\mathbb{I}$ 31'48	0°50'16				
max. Earth dist.	1738 Jun 21 11:30	29° $\mathbb{I}$ 33'25	10.01867 AU	conjunction	1744 Sep 14 17:27	22° $\mathbb{P}$ 08'27	1°58'08
	1738 Jun 24 20:58	0° $\mathbb{E}$		minimum elong	1744 Sep 14 17:24	22° $\mathbb{P}$ 08'26	1°58'08
morning rise	1738 Jul 09 10:59	1° $\mathbb{E}$ 53'11		max. Earth dist.	1744 Sep 14 19:14	22° $\mathbb{P}$ 09'01	10.45389 AU
retrograde	1738 Oct 22 16:58	10° $\mathbb{E}$ 09'59		morning rise	1744 Oct 02 01:39	24° $\mathbb{P}$ 17'21	
opposition	1738 Dec 28 12:32	6° $\mathbb{E}$ 41'08	0°-42'-51		1744 Nov 26 03:39	0° $\mathbb{L}$	
min. Earth dist.	1738 Dec 28 08:09	6° $\mathbb{E}$ 42'02	8.02460 AU	retrograde	1745 Jan 10 13:19	1° $\mathbb{L}$ 47'59	
direct	1739 Mar 05 07:24	3° $\mathbb{E}$ 12'15			1745 Feb 26 08:05	30° $\mathbb{R}$ $\mathbb{P}$	
evening set	1739 Jun 18 06:39	11° $\mathbb{E}$ 26'35		opposition	1745 Mar 18 22:32	28° $\mathbb{P}$ 26'38	2°34'05
				min. Earth dist.	1745 Mar 18 20:47	28° $\mathbb{P}$ 26'59	8.51054 AU
conjunction	1739 Jul 06 11:24	13° $\mathbb{E}$ 47'43	0°-17'-55	direct	1745 May 27 17:02	24° $\mathbb{P}$ 59'53	
minimum elong	1739 Jul 06 11:24	13° $\mathbb{E}$ 47'44	0°17'56		1745 Aug 17 11:16	0° $\mathbb{L}$	
max. Earth dist.	1739 Jul 06 17:33	13° $\mathbb{E}$ 49'43	10.03750 AU	evening set	1745 Sep 10 16:03	2° $\mathbb{L}$ 47'24	
morning rise	1739 Jul 24 15:42	16° $\mathbb{E}$ 08'42					
retrograde	1739 Nov 06 01:49	24° $\mathbb{E}$ 20'18		conjunction	1745 Sep 27 23:58	4° $\mathbb{L}$ 54'50	2°10'03
opposition	1740 Jan 11 16:27	20° $\mathbb{E}$ 52'24	0°-1'-39	minimum elong	1745 Sep 27 23:56	4° $\mathbb{L}$ 54'49	2°10'04
min. Earth dist.	1740 Jan 11 11:13	20° $\mathbb{E}$ 53'29	8.05738 AU	max. Earth dist.	1745 Sep 28 00:58	4° $\mathbb{L}$ 55'08	10.56513 AU



morning rise	1745 Oct 15 03:15	7°♂00'51		morning rise	1751 Dec 24 21:49	17°♂54'39	
retrograde	1746 Jan 23 04:22	14°♂23'45		retrograde	1752 Apr 03 01:31	24°♂53'23	
opposition	1746 Mar 31 22:38	11°♂03'32	2°44'30	opposition	1752 Jun 12 07:52	21°♂35'40	1°23'20
min. Earth dist.	1746 Mar 31 21:06	11°♂03'50	8.62141 AU	min. Earth dist.	1752 Jun 12 10:45	21°♂35'08	9.04746 AU
direct	1746 Jun 10 04:11	7°♂37'54		direct	1752 Aug 22 10:14	18°♂16'00	
evening set	1746 Sep 23 16:59	15°♂17'32		evening set	1752 Dec 02 01:00	25°♂18'52	
conjunction	1746 Oct 10 20:36	17°♂22'19	2°15'32	conjunction	1752 Dec 18 16:01	27°♂15'40	0°56'14
minimum elong	1746 Oct 10 20:35	17°♂22'18	2°15'32	minimum elong	1752 Dec 18 16:02	27°♂15'41	0°56'14
max. Earth dist.	1746 Oct 10 21:28	17°♂22'35	10.67399 AU	max. Earth dist.	1752 Dec 18 11:53	27°♂14'27	11.05244 AU
morning rise	1746 Oct 27 19:32	19°♂25'44		morning rise	1753 Jan 04 06:18	29°♂12'17	
retrograde	1747 Feb 04 14:10	26°♂41'38			1753 Jan 11 05:33	0°♂	
opposition	1747 Apr 13 17:38	23°♂22'23	2°47'02	retrograde	1753 Apr 14 19:48	6°♂11'56	
min. Earth dist.	1747 Apr 13 17:04	23°♂22'30	8.72739 AU	opposition	1753 Jun 24 10:14	2°♂53'53	0°53'25
direct	1747 Jun 23 06:41	19°♂57'53		min. Earth dist.	1753 Jun 24 13:57	2°♂53'11	9.05269 AU
evening set	1747 Oct 06 08:01	27°♂29'35			1753 Aug 11 08:09	30°♂11'56	
conjunction	1747 Oct 23 07:50	29°♂32'03	2°14'44	direct	1753 Sep 03 07:49	29°♂34'48	
minimum elong	1747 Oct 23 07:51	29°♂32'03	2°14'44		1753 Sep 26 02:26	0°♂	
max. Earth dist.	1747 Oct 23 07:47	29°♂32'02	10.77568 AU	evening set	1753 Dec 13 08:27	6°♂35'33	
	1747 Oct 27 04:16	0°♂		conjunction	1753 Dec 29 23:20	8°♂32'24	0°30'48
morning rise	1747 Nov 09 03:21	1°♂33'17		minimum elong	1753 Dec 29 23:21	8°♂32'25	0°30'48
retrograde	1748 Feb 16 16:25	8°♂43'08		max. Earth dist.	1753 Dec 29 18:48	8°♂31'04	11.04704 AU
opposition	1748 Apr 25 07:56	5°♂24'39	2°42'07	morning rise	1754 Jan 15 14:24	10°♂29'19	
min. Earth dist.	1748 Apr 25 08:47	5°♂24'30	8.82385 AU	retrograde	1754 Apr 26 18:06	17°♂31'27	
direct	1748 Jul 05 04:36	2°♂01'15		opposition	1754 Jul 06 13:01	14°♂12'50	0°21'22
evening set	1748 Oct 17 14:11	9°♂25'25		min. Earth dist.	1754 Jul 06 16:35	14°♂12'11	9.03615 AU
conjunction	1748 Nov 03 10:49	11°♂25'54	2°08'06	direct	1754 Sep 15 05:14	10°♂35'10	
minimum elong	1748 Nov 03 10:51	11°♂25'55	2°08'05	evening set	1754 Dec 24 16:34	17°♂35'17	
max. Earth dist.	1748 Nov 03 09:08	11°♂25'24	10.86588 AU	conjunction	1755 Jan 10 07:50	19°♂51'33	0°04'08
morning rise	1748 Nov 20 03:51	13°♂25'20		minimum elong	1755 Jan 10 07:50	19°♂51'33	0°04'08
	1748 Dec 03 22:17	15°♂		behind sun begin	1755 Jan 10 00:57	19°♂49'33	
retrograde	1749 Feb 27 15:24	20°♂30'21		behind sun end	1755 Jan 10 14:42	19°♂53'34	
opposition	1749 May 07 18:06	17°♂12'24	2°30'27	max. Earth dist.	1755 Jan 10 03:55	19°♂50'26	11.01989 AU
min. Earth dist.	1749 May 07 19:57	17°♂12'03	8.90686 AU	morning rise	1755 Jan 26 23:52	21°♂49'07	
	1749 Jun 08 20:38	15°♂11'15		desc. node	1755 Mar 07 20:30	25°♂59'01	
direct	1749 Jul 17 20:25	13°♂50'04		retrograde	1755 May 08 19:34	28°♂55'13	
	1749 Aug 25 03:44	15°♂		opposition	1755 Jul 18 17:05	25°♂35'50	0°-11'-41
evening set	1749 Oct 29 12:36	21°♂07'19		min. Earth dist.	1755 Jul 18 20:03	25°♂35'17	8.99831 AU
conjunction	1749 Nov 15 06:51	23°♂06'16	1°56'13	direct	1755 Sep 27 00:37	22°♂17'23	
minimum elong	1749 Nov 15 06:54	23°♂06'17	1°56'12	evening set	1756 Jan 05 02:59	29°♂18'23	
max. Earth dist.	1749 Nov 15 04:10	23°♂05'28	10.94113 AU		1756 Jan 11 01:05	0°♂	
morning rise	1749 Dec 01 22:13	25°♂04'22		conjunction	1756 Jan 21 18:49	1°♂16'25	0°-23'-1
	1750 Jan 19 14:47	0°♂		minimum elong	1756 Jan 21 18:48	1°♂16'25	0°23'01
retrograde	1750 Mar 11 11:13	2°♂05'51		max. Earth dist.	1756 Jan 21 15:02	1°♂15'18	10.97189 AU
	1750 Mar 03 14:25	30°♂11'15		morning rise	1756 Feb 07 12:11	3°♂14'57	
opposition	1750 May 20 00:54	28°♂48'10	2°12'49	retrograde	1756 May 20 02:32	10°♂26'29	
min. Earth dist.	1750 May 20 02:45	28°♂47'49	8.97330 AU	opposition	1756 Jul 29 23:53	7°♂06'10	0°-44'-40
direct	1750 Jul 30 05:47	25°♂26'51		min. Earth dist.	1756 Jul 30 02:54	7°♂05'37	8.94053 AU
	1750 Oct 17 07:22	0°♂		direct	1756 Oct 07 21:09	3°♂47'42	
evening set	1750 Nov 10 04:33	2°♂38'04		evening set	1757 Jan 15 17:10	10°♂51'05	
conjunction	1750 Nov 26 21:18	4°♂35'55	1°39'45	conjunction	1757 Feb 01 09:48	12°♂50'11	0°-49'-27
minimum elong	1750 Nov 26 21:20	4°♂35'55	1°39'45	minimum elong	1757 Feb 01 09:46	12°♂50'11	0°49'27
max. Earth dist.	1750 Nov 26 18:48	4°♂35'10	10.99858 AU	max. Earth dist.	1757 Feb 01 05:28	12°♂48'53	10.90490 AU
morning rise	1750 Dec 13 11:37	6°♂33'06		morning rise	1757 Feb 18 04:58	14°♂50'03	
retrograde	1751 Mar 23 06:49	13°♂32'29			1757 Feb 19 15:00	15°♂	
opposition	1751 Jun 01 05:10	10°♂14'52	1°50'08	retrograde	1757 Jun 01 14:00	22°♂08'18	
min. Earth dist.	1751 Jun 01 07:08	10°♂14'30	9.02072 AU	opposition	1757 Aug 11 10:11	18°♂46'55	-1°-16'-19
direct	1751 Aug 11 10:56	6°♂54'27		min. Earth dist.	1757 Aug 11 13:27	18°♂46'18	8.86508 AU
evening set	1751 Nov 21 16:11	14°♂00'50		direct	1757 Oct 19 19:03	15°♂28'12	
conjunction	1751 Dec 08 07:53	15°♂57'58	1°19'30	evening set	1758 Jan 27 12:46	22°♂35'27	
minimum elong	1751 Dec 08 07:55	15°♂57'59	1°19'30	conjunction	1758 Feb 13 06:42	24°♂35'56	-1°-14'-13
max. Earth dist.	1751 Dec 08 05:06	15°♂57'09	11.03610 AU	minimum elong	1758 Feb 13 06:40	24°♂35'55	1°14'13



max. Earth dist.	1758 Feb 13 02:31	24° $\approx$ 34'40	10.82148 AU		1764 May 30 20:59	15° $\mathcal{B}$	
morning rise	1758 Mar 02 03:58	26° $\approx$ 37'24		retrograde	1764 Sep 02 22:44	21° $\mathcal{B}$ 46'41	
	1758 Apr 01 17:22	0° $\mathcal{H}$		opposition	1764 Nov 10 03:45	18° $\mathcal{B}$ 17'32	-2°-30'-7
retrograde	1758 Jun 14 06:57	4° $\mathcal{H}$ 03'30		min. Earth dist.	1764 Nov 10 02:54	18° $\mathcal{B}$ 17'42	8.15367 AU
opposition	1758 Aug 24 00:25	0° $\mathcal{H}$ 40'53	-1°-45'-21		1765 Jan 03 19:08	15° $\mathcal{R}\mathcal{B}$	
min. Earth dist.	1758 Aug 24 03:31	0° $\mathcal{H}$ 40'18	8.77484 AU	direct	1765 Jan 15 16:37	14° $\mathcal{B}$ 52'04	
	1758 Sep 02 01:50	30° $\mathcal{R}\mathcal{B}$			1765 Jan 27 12:11	15° $\mathcal{B}$	
direct	1758 Oct 31 22:37	27° $\approx$ 21'42		evening set	1765 Apr 28 01:48	22° $\mathcal{B}$ 50'34	
	1758 Dec 27 14:54	0° $\mathcal{H}$					
evening set	1759 Feb 08 15:05	4° $\mathcal{H}$ 34'10		conjunction	1765 May 15 20:23	25° $\mathcal{B}$ 07'35	-1°-52'-27
				minimum elong	1765 May 15 20:26	25° $\mathcal{B}$ 07'36	1°52'28
conjunction	1759 Feb 25 10:55	6° $\mathcal{H}$ 36'22	-1°-36'-12	max. Earth dist.	1765 May 15 22:25	25° $\mathcal{B}$ 08'14	10.11620 AU
minimum elong	1759 Feb 25 10:53	6° $\mathcal{H}$ 36'22	1°36'12	morning rise	1765 Jun 02 18:24	27° $\mathcal{B}$ 25'44	
max. Earth dist.	1759 Feb 25 08:04	6° $\mathcal{H}$ 35'30	10.72480 AU		1765 Jun 23 19:45	0° $\mathcal{II}$	
morning rise	1759 Mar 14 10:28	8° $\mathcal{H}$ 39'44		retrograde	1765 Sep 17 10:57	5° $\mathcal{II}$ 43'56	
retrograde	1759 Jun 27 08:49	16° $\mathcal{H}$ 14'29		opposition	1765 Nov 24 04:53	2° $\mathcal{II}$ 14'24	-2°-7'-40
opposition	1759 Sep 05 19:30	12° $\mathcal{H}$ 50'35	-2°-10'-23	min. Earth dist.	1765 Nov 24 02:43	2° $\mathcal{II}$ 14'51	8.08669 AU
min. Earth dist.	1759 Sep 05 21:28	12° $\mathcal{H}$ 50'12	8.67328 AU		1765 Dec 23 23:32	30° $\mathcal{R}\mathcal{B}$	
direct	1759 Nov 13 05:58	9° $\mathcal{H}$ 30'45		direct	1766 Jan 29 15:53	28° $\mathcal{B}$ 47'44	
evening set	1760 Feb 21 01:18	16° $\mathcal{H}$ 49'34			1766 Mar 06 20:54	0° $\mathcal{II}$	
				evening set	1766 May 12 19:05	6° $\mathcal{II}$ 52'40	
conjunction	1760 Mar 08 23:28	18° $\mathcal{H}$ 53'46	-1°-54'-16				
minimum elong	1760 Mar 08 23:26	18° $\mathcal{H}$ 53'46	1°54'17	conjunction	1766 May 30 18:01	9° $\mathcal{II}$ 11'45	-1°-30'-57
max. Earth dist.	1760 Mar 08 21:36	18° $\mathcal{H}$ 53'12	10.61870 AU	minimum elong	1766 May 30 18:04	9° $\mathcal{II}$ 11'47	1°30'58
morning rise	1760 Mar 26 01:43	20° $\mathcal{H}$ 59'19		max. Earth dist.	1766 May 30 21:26	9° $\mathcal{II}$ 12'52	10.06152 AU
retrograde	1760 Jul 09 18:16	28° $\mathcal{H}$ 43'09		morning rise	1766 Jun 17 19:25	11° $\mathcal{II}$ 31'40	
opposition	1760 Sep 17 19:57	25° $\mathcal{H}$ 17'56	-2°-30'00	retrograde	1766 Oct 02 01:00	19° $\mathcal{II}$ 50'48	
min. Earth dist.	1760 Sep 17 20:56	25° $\mathcal{H}$ 17'44	8.56446 AU	opposition	1766 Dec 08 08:18	16° $\mathcal{II}$ 21'15	-1°-37'-14
direct	1760 Nov 24 17:07	21° $\mathcal{H}$ 57'14		min. Earth dist.	1766 Dec 08 05:10	16° $\mathcal{II}$ 21'54	8.04462 AU
evening set	1761 Mar 04 20:34	29° $\mathcal{H}$ 23'22		direct	1767 Feb 12 19:59	12° $\mathcal{II}$ 53'29	
	1761 Mar 09 20:05	0° $\mathcal{Y}$		evening set	1767 May 27 18:00	21° $\mathcal{II}$ 03'15	
conjunction	1761 Mar 21 21:37	1° $\mathcal{Y}$ 29'52	-2°-7'-18	conjunction	1767 Jun 14 20:18	23° $\mathcal{II}$ 23'44	-1°-3'-48
minimum elong	1761 Mar 21 21:35	1° $\mathcal{Y}$ 29'51	2°07'20	minimum elong	1767 Jun 14 20:21	23° $\mathcal{II}$ 23'45	1°03'49
max. Earth dist.	1761 Mar 21 19:54	1° $\mathcal{Y}$ 29'20	10.50764 AU	max. Earth dist.	1767 Jun 15 00:29	23° $\mathcal{II}$ 25'06	10.03348 AU
morning rise	1761 Apr 08 03:11	3° $\mathcal{Y}$ 37'48		morning rise	1767 Jul 02 23:58	25° $\mathcal{II}$ 44'41	
retrograde	1761 Jul 23 09:37	11° $\mathcal{Y}$ 30'40			1767 Aug 08 01:15	0° $\mathcal{E}$	
opposition	1761 Oct 01 01:54	8° $\mathcal{Y}$ 04'12	-2°-42'-50	retrograde	1767 Oct 16 14:19	4° $\mathcal{E}$ 02'07	
min. Earth dist.	1761 Oct 01 02:38	8° $\mathcal{Y}$ 04'03	8.45285 AU	opposition	1767 Dec 22 12:43	0° $\mathcal{E}$ 32'54	-1°00'-40
direct	1761 Dec 07 12:19	4° $\mathcal{Y}$ 42'26		min. Earth dist.	1767 Dec 22 09:14	0° $\mathcal{E}$ 33'38	8.03035 AU
evening set	1762 Mar 18 01:21	12° $\mathcal{Y}$ 16'35			1767 Dec 29 04:23	30° $\mathcal{R}\mathcal{II}$	
				direct	1768 Feb 27 04:17	27° $\mathcal{II}$ 04'14	
conjunction	1762 Apr 04 05:59	14° $\mathcal{Y}$ 25'37	-2°-14'-17		1768 Apr 25 08:10	0° $\mathcal{E}$	
minimum elong	1762 Apr 04 05:59	14° $\mathcal{Y}$ 25'37	2°14'19	evening set	1768 Jun 10 19:58	5° $\mathcal{E}$ 16'55	
max. Earth dist.	1762 Apr 04 04:04	14° $\mathcal{Y}$ 25'01	10.39612 AU				
morning rise	1762 Apr 21 15:27	16° $\mathcal{Y}$ 36'10		conjunction	1768 Jun 29 00:14	7° $\mathcal{E}$ 37'56	0°-32'-43
retrograde	1762 Aug 06 08:19	24° $\mathcal{Y}$ 37'33		minimum elong	1768 Jun 29 00:15	7° $\mathcal{E}$ 37'56	0°32'43
opposition	1762 Oct 14 13:27	21° $\mathcal{Y}$ 09'59	-2°-47'-38	max. Earth dist.	1768 Jun 29 04:40	7° $\mathcal{E}$ 39'23	10.03387 AU
min. Earth dist.	1762 Oct 14 14:20	21° $\mathcal{Y}$ 09'48	8.34308 AU	morning rise	1768 Jul 17 04:42	9° $\mathcal{E}$ 59'00	
direct	1762 Dec 20 14:09	17° $\mathcal{Y}$ 47'02		retrograde	1768 Oct 30 00:26	18° $\mathcal{E}$ 12'22	
evening set	1763 Mar 31 15:58	25° $\mathcal{Y}$ 29'36		opposition	1769 Jan 04 16:28	14° $\mathcal{E}$ 43'49	0°-20'-24
				min. Earth dist.	1769 Jan 04 13:00	14° $\mathcal{E}$ 44'32	8.04467 AU
conjunction	1763 Apr 18 00:52	27° $\mathcal{Y}$ 41'20	-2°-14'-23	direct	1769 Mar 12 16:03	11° $\mathcal{E}$ 14'29	
minimum elong	1763 Apr 18 00:53	27° $\mathcal{Y}$ 41'21	2°14'24	evening set	1769 Jun 25 22:28	19° $\mathcal{E}$ 28'03	
max. Earth dist.	1763 Apr 17 23:41	27° $\mathcal{Y}$ 40'58	10.28931 AU	asc. node	1769 Jul 11 02:19	21° $\mathcal{E}$ 25'05	
morning rise	1763 May 05 14:30	29° $\mathcal{Y}$ 54'34					
	1763 May 06 07:56	0° $\mathcal{B}$		conjunction	1769 Jul 14 03:00	21° $\mathcal{E}$ 48'39	0°00'17
retrograde	1763 Aug 20 13:12	8° $\mathcal{B}$ 03'29		minimum elong	1769 Jul 14 02:59	21° $\mathcal{E}$ 48'39	0°00'17
opposition	1763 Oct 28 06:16	4° $\mathcal{B}$ 35'00	-2°-43'-32	behind sun begin	1769 Jul 13 19:39	21° $\mathcal{E}$ 46'18	
min. Earth dist.	1763 Oct 28 06:37	4° $\mathcal{B}$ 34'55	8.24109 AU	behind sun end	1769 Jul 14 10:18	21° $\mathcal{E}$ 51'00	
direct	1764 Jan 02 23:15	1° $\mathcal{B}$ 10'48		max. Earth dist.	1769 Jul 14 07:21	21° $\mathcal{E}$ 50'01	10.06233 AU
evening set	1764 Apr 13 16:21	9° $\mathcal{B}$ 01'41		morning rise	1769 Aug 01 06:28	24° $\mathcal{E}$ 08'53	
					1769 Sep 23 11:50	0° $\mathcal{J}$	
conjunction	1764 May 01 06:03	11° $\mathcal{B}$ 16'09	-2°-7'-6	retrograde	1769 Nov 13 04:04	2° $\mathcal{J}$ 16'11	
minimum elong	1764 May 01 06:05	11° $\mathcal{B}$ 16'10	2°07'08		1770 Jan 03 23:45	30° $\mathcal{R}\mathcal{E}$	
max. Earth dist.	1764 May 01 06:24	11° $\mathcal{B}$ 16'16	10.19385 AU	opposition	1770 Jan 18 18:00	28° $\mathcal{E}$ 48'36	0°20'47
morning rise	1764 May 18 23:58	13° $\mathcal{B}$ 32'00		min. Earth dist.	1770 Jan 18 14:33	28° $\mathcal{E}$ 49'19	8.08641 AU



direct	1770 Mar 27 04:58	25° $\overline{5}$ 18'55		evening set	1776 Sep 29 22:00	22° $\overline{5}$ 06'54	
	1770 Jun 11 08:06	0° $\Omega$					
evening set	1770 Jul 10 22:20	3° $\Omega$ 31'17		conjunction	1776 Oct 16 23:27	24° $\overline{5}$ 10'22	2°15'47
				minimum elong	1776 Oct 16 23:26	24° $\overline{5}$ 10'22	2°15'47
conjunction	1770 Jul 29 01:21	5° $\Omega$ 50'33	0°32'57	max. Earth dist.	1776 Oct 16 23:42	24° $\overline{5}$ 10'26	10.72960 AU
minimum elong	1770 Jul 29 01:20	5° $\Omega$ 50'32	0°32'58	morning rise	1776 Nov 02 20:39	26° $\overline{5}$ 12'34	
max. Earth dist.	1770 Jul 29 05:37	5° $\Omega$ 51'55	10.11680 AU		1776 Dec 07 11:17	0° $\mathcal{M}$	
morning rise	1770 Aug 16 02:10	8° $\Omega$ 09'04		retrograde	1777 Feb 10 10:12	3° $\mathcal{M}$ 24'53	
	1770 Oct 22 14:00	15° $\Omega$		opposition	1777 Apr 19 21:37	0° $\mathcal{M}$ 05'59	2°45'11
retrograde	1770 Nov 27 01:21	16° $\Omega$ 08'57		min. Earth dist.	1777 Apr 19 20:52	0° $\mathcal{M}$ 06'08	8.78210 AU
	1771 Jan 01 22:56	15° $\mathcal{R}\Omega$			1777 Apr 21 05:04	30° $\mathcal{R}\overline{5}$	
opposition	1771 Feb 01 16:15	12° $\Omega$ 42'29	1°00'11	direct	1777 Jun 29 16:36	26° $\overline{5}$ 42'04	
min. Earth dist.	1771 Feb 01 12:30	12° $\Omega$ 43'15	8.15268 AU		1777 Sep 03 13:12	0° $\mathcal{M}$	
direct	1771 Apr 10 15:22	9° $\Omega$ 12'49		evening set	1777 Oct 12 07:55	4° $\mathcal{M}$ 09'31	
	1771 Jul 06 03:29	15° $\Omega$					
evening set	1771 Jul 25 16:41	17° $\Omega$ 21'57		conjunction	1777 Oct 29 06:02	6° $\mathcal{M}$ 10'50	2°11'47
				minimum elong	1777 Oct 29 06:03	6° $\mathcal{M}$ 10'51	2°11'46
conjunction	1771 Aug 12 16:45	19° $\Omega$ 39'09	1°03'16	max. Earth dist.	1777 Oct 29 06:08	6° $\mathcal{M}$ 10'52	10.82896 AU
minimum elong	1771 Aug 12 16:42	19° $\Omega$ 39'08	1°03'16	morning rise	1777 Nov 15 00:08	8° $\mathcal{M}$ 11'01	
max. Earth dist.	1771 Aug 12 21:06	19° $\Omega$ 40'32	10.19363 AU		1778 Feb 03 20:11	15° $\mathcal{M}$	
morning rise	1771 Aug 30 13:32	21° $\Omega$ 55'17		retrograde	1778 Feb 22 12:51	15° $\mathcal{M}$ 18'01	
retrograde	1771 Dec 10 16:45	29° $\Omega$ 46'54			1778 Mar 13 08:31	15° $\mathcal{R}\mathcal{M}$	
opposition	1772 Feb 15 10:07	26° $\Omega$ 21'40	1°35'25	opposition	1778 May 02 09:33	11° $\mathcal{M}$ 59'57	2°36'31
min. Earth dist.	1772 Feb 15 06:01	26° $\Omega$ 22'30	8.23914 AU	min. Earth dist.	1778 May 02 09:20	12° $\mathcal{M}$ 00'00	8.87508 AU
direct	1772 Apr 23 21:45	22° $\Omega$ 52'21		direct	1778 Jul 12 09:30	8° $\mathcal{M}$ 37'21	
	1772 Jul 31 11:05	0° $\mathcal{M}$			1778 Oct 16 02:03	15° $\mathcal{M}$	
evening set	1772 Aug 08 03:42	0° $\mathcal{M}$ 56'35		evening set	1778 Oct 24 09:48	15° $\mathcal{M}$ 57'35	
conjunction	1772 Aug 25 23:42	3° $\mathcal{M}$ 11'11	1°29'31	conjunction	1778 Nov 10 05:15	17° $\mathcal{M}$ 57'10	2°02'14
minimum elong	1772 Aug 25 23:39	3° $\mathcal{M}$ 11'10	1°29'32	minimum elong	1778 Nov 10 05:17	17° $\mathcal{M}$ 57'11	2°02'14
max. Earth dist.	1772 Aug 26 04:09	3° $\mathcal{M}$ 12'36	10.28799 AU	max. Earth dist.	1778 Nov 10 04:52	17° $\mathcal{M}$ 57'03	10.91479 AU
morning rise	1772 Sep 12 15:31	5° $\mathcal{M}$ 24'29		morning rise	1778 Nov 26 21:10	19° $\mathcal{M}$ 55'47	
retrograde	1772 Dec 23 01:17	13° $\mathcal{M}$ 07'26		retrograde	1779 Mar 06 10:18	26° $\mathcal{M}$ 58'37	
opposition	1773 Feb 27 22:53	9° $\mathcal{M}$ 43'33	2°04'37	opposition	1779 May 14 17:50	23° $\mathcal{M}$ 41'10	2°21'31
min. Earth dist.	1773 Feb 27 19:10	9° $\mathcal{M}$ 44'18	8.34053 AU	min. Earth dist.	1779 May 14 19:03	23° $\mathcal{M}$ 40'56	8.95270 AU
direct	1773 May 07 22:55	6° $\mathcal{M}$ 14'54		direct	1779 Jul 24 20:13	20° $\mathcal{M}$ 19'47	
evening set	1773 Aug 22 05:37	14° $\mathcal{M}$ 12'55		evening set	1779 Nov 05 04:57	27° $\mathcal{M}$ 33'37	
conjunction	1773 Sep 08 20:51	16° $\mathcal{M}$ 24'37	1°50'28	conjunction	1779 Nov 21 22:19	29° $\mathcal{M}$ 31'52	1°47'47
minimum elong	1773 Sep 08 20:48	16° $\mathcal{M}$ 24'36	1°50'28	minimum elong	1779 Nov 21 22:21	29° $\mathcal{M}$ 31'53	1°47'47
max. Earth dist.	1773 Sep 09 00:50	16° $\mathcal{M}$ 25'52	10.39441 AU	max. Earth dist.	1779 Nov 21 20:11	29° $\mathcal{M}$ 31'14	10.98371 AU
morning rise	1773 Sep 26 07:22	18° $\mathcal{M}$ 34'55			1779 Nov 25 21:07	0° $\mathcal{Z}$	
retrograde	1774 Jan 05 01:29	26° $\mathcal{M}$ 09'16		morning rise	1779 Dec 08 13:02	1° $\mathcal{Z}$ 29'23	
opposition	1774 Mar 13 06:32	22° $\mathcal{M}$ 46'47	2°26'34	retrograde	1780 Mar 17 05:37	8° $\mathcal{Z}$ 29'25	
min. Earth dist.	1774 Mar 13 03:43	22° $\mathcal{M}$ 47'21	8.45119 AU	opposition	1780 May 25 23:21	5° $\mathcal{Z}$ 12'19	2°01'03
direct	1774 May 21 19:08	19° $\mathcal{M}$ 19'04		min. Earth dist.	1780 May 26 01:44	5° $\mathcal{Z}$ 11'52	9.01187 AU
evening set	1774 Sep 04 21:16	27° $\mathcal{M}$ 09'53		direct	1780 Aug 05 03:46	1° $\mathcal{Z}$ 51'59	
				evening set	1780 Nov 15 18:44	9° $\mathcal{Z}$ 00'26	
conjunction	1774 Sep 22 07:31	29° $\mathcal{M}$ 18'39	2°05'19	conjunction	1780 Dec 02 10:41	10° $\mathcal{Z}$ 57'46	1°29'11
minimum elong	1774 Sep 22 07:28	29° $\mathcal{M}$ 18'38	2°05'19	minimum elong	1780 Dec 02 10:44	10° $\mathcal{Z}$ 57'47	1°29'12
max. Earth dist.	1774 Sep 22 10:24	29° $\mathcal{M}$ 19'32	10.50720 AU	max. Earth dist.	1780 Dec 02 07:25	10° $\mathcal{Z}$ 56'48	11.03295 AU
	1774 Sep 27 20:58	0° $\overline{5}$		morning rise	1780 Dec 19 00:50	12° $\mathcal{Z}$ 54'35	
morning rise	1774 Oct 09 12:59	1° $\overline{5}$ 25'58		retrograde	1781 Mar 28 23:54	19° $\mathcal{Z}$ 53'18	
retrograde	1775 Jan 17 18:49	8° $\overline{5}$ 52'13		opposition	1781 Jun 07 02:55	16° $\mathcal{Z}$ 36'13	1°36'02
opposition	1775 Mar 26 08:45	5° $\overline{5}$ 31'03	2°40'38	min. Earth dist.	1781 Jun 07 05:37	16° $\mathcal{Z}$ 35'44	9.05010 AU
min. Earth dist.	1775 Mar 26 07:07	5° $\overline{5}$ 31'22	8.56536 AU	direct	1781 Aug 17 06:20	13° $\mathcal{Z}$ 16'47	
direct	1775 Jun 04 08:33	2° $\overline{5}$ 04'30		evening set	1781 Nov 27 04:51	20° $\mathcal{Z}$ 21'03	
evening set	1775 Sep 18 02:39	9° $\overline{5}$ 47'34					
conjunction	1775 Oct 05 08:11	11° $\overline{5}$ 53'32	2°13'44	conjunction	1781 Dec 13 20:07	22° $\mathcal{Z}$ 17'53	1°07'13
minimum elong	1775 Oct 05 08:10	11° $\overline{5}$ 53'32	2°13'44	minimum elong	1781 Dec 13 20:09	22° $\mathcal{Z}$ 17'53	1°07'13
max. Earth dist.	1775 Oct 05 09:23	11° $\overline{5}$ 53'54	10.62072 AU	max. Earth dist.	1781 Dec 13 16:44	22° $\mathcal{Z}$ 16'53	11.06026 AU
morning rise	1775 Oct 22 09:12	13° $\overline{5}$ 58'08		morning rise	1781 Dec 30 10:09	24° $\mathcal{Z}$ 14'24	
retrograde	1776 Jan 30 05:12	21° $\overline{5}$ 16'55			1782 Mar 01 20:45	0° $\mathcal{Z}$	
opposition	1776 Apr 07 05:30	17° $\overline{5}$ 56'59	2°46'45	retrograde	1782 Apr 09 19:18	1° $\mathcal{Z}$ 13'19	
min. Earth dist.	1776 Apr 07 04:31	17° $\overline{5}$ 57'11	8.67739 AU		1782 May 19 19:43	30° $\mathcal{R}\mathcal{Z}$	
direct	1776 Jun 16 15:23	14° $\overline{5}$ 31'43		opposition	1782 Jun 19 05:26	27° $\mathcal{Z}$ 56'00	1°07'27



min. Earth dist.	1782 Jun 19 08:17	27° <del>2</del> 55'29	9.06548 AU	max. Earth dist.	1788 Feb 20 01:20	1° <del>1</del> 19'56	10.76003 AU
direct	1782 Aug 29 05:55	24° <del>2</del> 37'14		morning rise	1788 Mar 08 04:44	3° <del>1</del> 24'01	
	1782 Nov 23 21:01	0° <del>3</del>		retrograde	1788 Jun 20 19:03	10° <del>1</del> 55'05	
evening set	1782 Dec 08 12:56	1° <del>3</del> 38'43		opposition	1788 Aug 30 08:03	7° <del>1</del> 31'26	-1°-59'-32
				min. Earth dist.	1788 Aug 30 11:32	7° <del>1</del> 30'47	8.70804 AU
conjunction	1782 Dec 25 03:57	3° <del>3</del> 35'27	0°42'41	direct	1788 Nov 06 23:30	4° <del>1</del> 11'30	
minimum elong	1782 Dec 25 03:58	3° <del>3</del> 35'28	0°42'41	evening set	1789 Feb 14 17:56	11° <del>1</del> 27'43	
max. Earth dist.	1782 Dec 24 23:55	3° <del>3</del> 34'16	11.06396 AU				
morning rise	1783 Jan 10 18:26	5° <del>3</del> 32'06		conjunction	1789 Mar 03 14:51	13° <del>1</del> 31'07	-1°-46'-33
retrograde	1783 Apr 21 17:48	12° <del>3</del> 32'49		minimum elong	1789 Mar 03 14:49	13° <del>1</del> 31'06	1°46'34
opposition	1783 Jul 01 08:03	9° <del>3</del> 15'02	0°36'17	max. Earth dist.	1789 Mar 03 10:19	13° <del>1</del> 29'43	10.65313 AU
min. Earth dist.	1783 Jul 01 11:58	9° <del>3</del> 14'19	9.05690 AU	morning rise	1789 Mar 20 15:58	15° <del>1</del> 35'48	
direct	1783 Sep 10 02:24	5° <del>3</del> 56'42		retrograde	1789 Jul 03 23:42	23° <del>1</del> 15'56	
evening set	1783 Dec 19 21:01	12° <del>3</del> 56'58		opposition	1789 Sep 12 06:18	19° <del>1</del> 50'48	-2°-21'-52
				min. Earth dist.	1789 Sep 12 09:26	19° <del>1</del> 50'11	8.59771 AU
conjunction	1784 Jan 05 11:58	14° <del>3</del> 53'58	0°16'29	direct	1789 Nov 19 09:29	16° <del>1</del> 29'54	
minimum elong	1784 Jan 05 11:58	14° <del>3</del> 53'58	0°16'28	evening set	1790 Feb 27 09:01	23° <del>1</del> 53'12	
max. Earth dist.	1784 Jan 05 06:26	14° <del>3</del> 52'21	11.04375 AU				
morning rise	1784 Jan 22 03:26	16° <del>3</del> 51'09		conjunction	1790 Mar 16 08:43	25° <del>1</del> 58'48	-2°-2'-3
retrograde	1784 May 02 15:51	23° <del>3</del> 55'15		minimum elong	1790 Mar 16 08:41	25° <del>1</del> 58'48	2°02'04
opposition	1784 Jul 12 11:49	20° <del>3</del> 36'44	0°03'34	max. Earth dist.	1790 Mar 16 05:38	25° <del>1</del> 57'51	10.53989 AU
min. Earth dist.	1784 Jul 12 16:44	20° <del>3</del> 35'49	9.02500 AU	morning rise	1790 Apr 02 12:52	28° <del>1</del> 05'49	
desc. node	1784 Aug 22 00:46	18° <del>3</del> 00'55			1790 Apr 18 15:10	0° <del>1</del>	
direct	1784 Sep 20 21:45	17° <del>3</del> 18'34		retrograde	1790 Jul 17 11:14	5° <del>1</del> 55'14	
evening set	1784 Dec 30 06:31	24° <del>3</del> 19'10		opposition	1790 Sep 25 09:49	2° <del>1</del> 28'41	-2°-38'00
				min. Earth dist.	1790 Sep 25 11:49	2° <del>1</del> 28'17	8.48352 AU
conjunction	1785 Jan 15 21:52	26° <del>3</del> 16'47	0°-10'-36		1790 Oct 31 00:19	30° <del>1</del> 11'31	
minimum elong	1785 Jan 15 21:52	26° <del>3</del> 16'47	0°10'37	direct	1790 Dec 02 02:48	29° <del>1</del> 06'44	
behind sun begin	1785 Jan 15 16:25	26° <del>3</del> 15'11			1791 Jan 02 14:49	0° <del>1</del>	
behind sun end	1785 Jan 16 03:20	26° <del>3</del> 18'23		evening set	1791 Mar 12 09:29	6° <del>1</del> 37'54	
max. Earth dist.	1785 Jan 15 15:45	26° <del>3</del> 14'59	11.00099 AU				
morning rise	1785 Feb 01 14:41	28° <del>3</del> 14'50		conjunction	1791 Mar 29 12:36	8° <del>1</del> 46'00	-2°-11'-56
	1785 Feb 17 03:23	0° <del>3</del>		minimum elong	1791 Mar 29 12:35	8° <del>1</del> 46'00	2°11'58
retrograde	1785 May 14 19:55	5° <del>3</del> 23'51		max. Earth dist.	1791 Mar 29 11:09	8° <del>1</del> 45'33	10.42541 AU
opposition	1785 Jul 24 17:43	2° <del>3</del> 04'17	0°-29'-35	morning rise	1791 Apr 15 20:13	10° <del>1</del> 55'33	
min. Earth dist.	1785 Jul 24 22:36	2° <del>3</del> 03'23	8.97159 AU	retrograde	1791 Jul 31 07:55	18° <del>1</del> 53'58	
	1785 Aug 23 22:29	30° <del>3</del> 18'31		opposition	1791 Oct 08 19:06	15° <del>1</del> 26'08	-2°-46'-38
direct	1785 Oct 02 20:03	28° <del>3</del> 46'02		min. Earth dist.	1791 Oct 08 19:37	15° <del>1</del> 26'02	8.37078 AU
	1785 Nov 10 14:20	0° <del>3</del>		direct	1791 Dec 15 01:03	12° <del>1</del> 03'03	
evening set	1786 Jan 10 18:55	5° <del>3</del> 48'24		evening set	1792 Mar 24 19:43	19° <del>1</del> 42'31	
conjunction	1786 Jan 27 11:13	7° <del>3</del> 47'00	0°-37'-26	conjunction	1792 Apr 11 02:47	21° <del>1</del> 53'16	-2°-15'-16
minimum elong	1786 Jan 27 11:12	7° <del>3</del> 47'00	0°37'27	minimum elong	1792 Apr 11 02:48	21° <del>1</del> 53'16	2°15'18
max. Earth dist.	1786 Jan 27 06:01	7° <del>3</del> 45'27	10.93762 AU	max. Earth dist.	1792 Apr 11 02:35	21° <del>1</del> 53'12	10.31534 AU
morning rise	1786 Feb 13 05:31	9° <del>3</del> 46'15		morning rise	1792 Apr 28 14:24	24° <del>1</del> 05'31	
	1786 Apr 06 08:45	15° <del>3</del>			1792 Jun 22 21:48	0° <del>1</del>	
retrograde	1786 May 27 05:59	17° <del>3</del> 01'30		retrograde	1792 Aug 13 11:15	2° <del>1</del> 12'01	
	1786 Jul 18 21:44	15° <del>3</del> 18'31			1792 Oct 05 01:39	30° <del>1</del> 11'31	
opposition	1786 Aug 06 02:28	13° <del>3</del> 40'42	-1°-2'-1	opposition	1792 Oct 21 10:00	28° <del>1</del> 43'09	-2°-46'-41
min. Earth dist.	1786 Aug 06 06:30	13° <del>3</del> 39'57	8.89891 AU	min. Earth dist.	1792 Oct 21 09:18	28° <del>1</del> 43'18	8.26525 AU
direct	1786 Oct 14 18:05	10° <del>3</del> 22'07		direct	1792 Dec 27 06:20	25° <del>1</del> 18'52	
	1786 Dec 31 15:07	15° <del>3</del>			1793 Mar 12 12:38	0° <del>1</del>	
evening set	1787 Jan 22 12:09	17° <del>3</del> 27'43		evening set	1793 Apr 07 16:04	3° <del>1</del> 06'43	
conjunction	1787 Feb 08 05:36	19° <del>3</del> 27'36	-1°-3'-7	conjunction	1793 Apr 25 03:36	5° <del>1</del> 20'11	-2°-11'-23
minimum elong	1787 Feb 08 05:34	19° <del>3</del> 27'36	1°03'07	minimum elong	1793 Apr 25 03:38	5° <del>1</del> 20'11	2°11'24
max. Earth dist.	1787 Feb 08 00:50	19° <del>3</del> 26'10	10.85618 AU	max. Earth dist.	1793 Apr 25 04:05	5° <del>1</del> 20'20	10.21564 AU
morning rise	1787 Feb 25 01:42	21° <del>3</del> 28'22		morning rise	1793 May 12 19:36	7° <del>1</del> 35'06	
retrograde	1787 Jun 08 20:49	28° <del>3</del> 51'02			1793 Jul 28 11:27	15° <del>1</del>	
opposition	1787 Aug 18 14:53	25° <del>3</del> 28'50	-1°-32'-27	retrograde	1793 Aug 27 19:33	15° <del>1</del> 48'08	
min. Earth dist.	1787 Aug 18 18:26	25° <del>3</del> 28'10	8.80984 AU		1793 Sep 27 05:00	15° <del>1</del> 18'33	
direct	1787 Oct 26 18:39	22° <del>3</del> 09'41		opposition	1793 Nov 04 05:47	12° <del>1</del> 18'33	-2°-37'-29
evening set	1788 Feb 03 11:27	29° <del>3</del> 19'58		min. Earth dist.	1793 Nov 04 04:33	12° <del>1</del> 18'48	8.17282 AU
	1788 Feb 09 01:19	0° <del>3</del>		direct	1794 Jan 09 19:48	8° <del>1</del> 53'03	
					1794 Apr 07 04:57	15° <del>1</del>	
conjunction	1788 Feb 20 06:19	1° <del>1</del> 21'27	-1°-26'-32	evening set	1794 Apr 21 21:55	16° <del>1</del> 48'51	
minimum elong	1788 Feb 20 06:17	1° <del>1</del> 21'26	1°26'32				



conjunction	1794 May 09 14:13	19°♄04'57	-2°00'-1	minimum elong	1800 Aug 06 15:06	13°♄48'39	0°50'11
minimum elong	1794 May 09 14:16	19°♄04'57	2°00'03	max. Earth dist.	1800 Aug 06 21:14	13°♄50'37	10.16298 AU
max. Earth dist.	1794 May 09 15:35	19°♄05'23	10.13205 AU		1800 Aug 15 21:48	15°♄	
morning rise	1794 May 27 10:34	21°♄22'19		morning rise	1800 Aug 24 13:45	16°♄05'55	
retrograde	1794 Sep 11 07:01	29°♄39'51		retrograde	1800 Dec 05 04:29	24°♄01'30	
opposition	1794 Nov 18 05:51	26°♄09'54	-2°-18'-59	opposition	1801 Feb 09 18:19	20°♄36'13	1°20'22
min. Earth dist.	1794 Nov 18 04:02	26°♄10'17	8.09906 AU	min. Earth dist.	1801 Feb 09 14:15	20°♄37'03	8.20604 AU
direct	1795 Jan 23 16:44	22°♄43'17		direct	1801 Apr 18 21:53	17°♄07'15	
	1795 Apr 30 09:49	0°♄		evening set	1801 Aug 03 04:45	25°♄13'56	
evening set	1795 May 06 12:00	0°♄46'03					
conjunction	1795 May 24 08:55	3°♄04'26	-1°-41'-29	conjunction	1801 Aug 21 02:32	27°♄29'42	1°18'25
minimum elong	1795 May 24 08:58	3°♄04'27	1°41'30	minimum elong	1801 Aug 21 02:29	27°♄29'41	1°18'26
max. Earth dist.	1795 May 24 11:34	3°♄05'18	10.06979 AU	max. Earth dist.	1801 Aug 21 07:01	27°♄31'07	10.25285 AU
morning rise	1795 Jun 11 09:05	5°♄23'49		morning rise	1801 Sep 07 20:37	29°♄44'15	
retrograde	1795 Sep 25 20:50	13°♄43'27		retrograde	1801 Sep 09 23:22	0°♄	
opposition	1795 Dec 02 08:54	10°♄13'31	-1°-51'-55	retrograde	1801 Dec 18 15:22	7°♄31'06	
min. Earth dist.	1795 Dec 02 06:14	10°♄14'04	8.04880 AU	opposition	1802 Feb 23 09:49	4°♄07'11	1°52'25
direct	1796 Feb 06 19:33	6°♄45'55		min. Earth dist.	1802 Feb 23 06:38	4°♄07'49	8.30318 AU
evening set	1796 May 20 08:55	14°♄54'16		direct	1802 May 03 03:16	0°♄38'44	
				evening set	1802 Aug 17 11:13	8°♄39'41	
conjunction	1796 Jun 07 09:49	17°♄14'21	-1°-16'-39	conjunction	1802 Sep 04 04:26	10°♄52'38	1°41'50
minimum elong	1796 Jun 07 09:53	17°♄14'22	1°16'41	minimum elong	1802 Sep 04 04:23	10°♄52'37	1°41'51
max. Earth dist.	1796 Jun 07 14:02	17°♄15'44	10.03307 AU	max. Earth dist.	1802 Sep 04 07:19	10°♄53'32	10.35497 AU
morning rise	1796 Jun 25 12:51	19°♄35'07		morning rise	1802 Sep 21 17:26	13°♄04'15	
retrograde	1796 Oct 09 10:53	27°♄54'12		retrograde	1802 Dec 31 18:05	20°♄42'28	
opposition	1796 Dec 15 13:27	24°♄24'39	-1°-17'-45	opposition	1803 Mar 08 20:02	17°♄19'54	2°17'40
min. Earth dist.	1796 Dec 15 09:38	24°♄25'27	8.02555 AU	min. Earth dist.	1803 Mar 08 17:28	17°♄20'25	8.40945 AU
direct	1797 Feb 20 03:14	20°♄56'17		direct	1803 May 17 03:30	13°♄52'16	
evening set	1797 Jun 04 10:23	29°♄08'26		evening set	1803 Aug 31 07:48	21°♄46'30	
	1797 Jun 11 02:57	0°♄					
conjunction	1797 Jun 22 14:05	1°♄29'27	0°-47'-3	conjunction	1803 Sep 17 20:14	23°♄56'34	1°59'26
minimum elong	1797 Jun 22 14:07	1°♄29'27	0°47'04	minimum elong	1803 Sep 17 20:11	23°♄56'33	1°59'26
max. Earth dist.	1797 Jun 22 19:46	1°♄31'18	10.02442 AU	max. Earth dist.	1803 Sep 17 22:09	23°♄57'09	10.46336 AU
morning rise	1797 Jul 10 18:30	3°♄50'43		morning rise	1803 Oct 05 04:04	26°♄05'12	
retrograde	1797 Oct 23 22:57	12°♄06'44		retrograde	1803 Nov 08 22:01	0°♄	
opposition	1797 Dec 29 18:08	8°♄37'55	0°-38'-45	retrograde	1804 Jan 13 15:51	3°♄35'15	
min. Earth dist.	1797 Dec 29 13:16	8°♄38'55	8.03095 AU	opposition	1804 Mar 21 00:55	0°♄13'58	2°35'16
direct	1798 Mar 06 14:10	5°♄09'01		min. Earth dist.	1804 Mar 20 22:54	0°♄14'22	8.51940 AU
evening set	1798 Jun 19 13:37	13°♄22'55		direct	1804 Mar 24 00:09	30°♄	
				evening set	1804 May 29 19:43	26°♄47'19	
conjunction	1798 Jul 07 18:22	15°♄43'55	0°-14'-36		1804 Aug 01 21:01	0°♄	
minimum elong	1798 Jul 07 18:23	15°♄43'55	0°14'37		1804 Sep 12 18:22	4°♄34'11	
behind sun begin	1798 Jul 07 15:33	15°♄43'00		conjunction	1804 Sep 30 02:06	6°♄41'27	2°10'42
behind sun end	1798 Jul 07 21:14	15°♄44'50		minimum elong	1804 Sep 30 02:04	6°♄41'26	2°10'42
max. Earth dist.	1798 Jul 08 01:00	15°♄46'03	10.04441 AU	max. Earth dist.	1804 Sep 30 03:26	6°♄41'52	10.57314 AU
morning rise	1798 Jul 25 22:27	18°♄04'43		morning rise	1804 Oct 17 05:00	8°♄47'16	
retrograde	1798 Nov 07 06:42	26°♄15'30		retrograde	1805 Jan 25 06:46	16°♄09'42	
asc. node	1798 Dec 21 14:46	24°♄32'41		opposition	1805 Apr 03 00:37	12°♄49'34	2°44'52
opposition	1799 Jan 12 21:27	22°♄47'41	0°02'26	min. Earth dist.	1805 Apr 02 23:38	12°♄49'45	8.62842 AU
min. Earth dist.	1799 Jan 12 16:09	22°♄48'47	8.06471 AU	direct	1805 Jun 12 05:18	9°♄24'01	
direct	1799 Mar 21 02:08	19°♄18'31		evening set	1805 Sep 25 18:47	17°♄03'10	
evening set	1799 Jul 04 15:40	27°♄32'01					
conjunction	1799 Jul 22 19:40	29°♄52'02	0°18'33	conjunction	1805 Oct 12 22:08	19°♄07'49	2°15'32
minimum elong	1799 Jul 22 19:40	29°♄52'02	0°18'34	minimum elong	1805 Oct 12 22:08	19°♄07'49	2°15'31
max. Earth dist.	1799 Jul 23 02:29	29°♄54'14	10.09173 AU	max. Earth dist.	1805 Oct 12 22:34	19°♄07'57	10.67984 AU
	1799 Jul 23 20:19	0°♄		morning rise	1805 Oct 29 20:50	21°♄11'08	
morning rise	1799 Aug 09 21:44	2°♄11'27		retrograde	1806 Feb 06 14:38	28°♄26'44	
retrograde	1799 Nov 21 09:04	10°♄15'14		opposition	1806 Apr 15 19:33	25°♄07'34	2°46'38
opposition	1800 Jan 26 21:52	6°♄48'38	0°43'00	min. Earth dist.	1806 Apr 15 19:59	25°♄07'29	8.73207 AU
min. Earth dist.	1800 Jan 26 16:52	6°♄49'40	8.12455 AU	direct	1806 Jun 25 09:11	21°♄43'08	
direct	1800 Apr 04 12:49	3°♄19'25		evening set	1806 Oct 08 09:22	29°♄14'32	
evening set	1800 Jul 19 13:32	11°♄30'26			1806 Oct 14 17:57	0°♄	
conjunction	1800 Aug 06 15:08	13°♄48'39	0°50'10	conjunction	1806 Oct 25 08:55	1°♄16'54	2°14'07
				minimum elong	1806 Oct 25 08:55	1°♄16'54	2°14'06



max. Earth dist.	1806 Oct 25 07:41	1°♈16'32	10.77908 AU	retrograde	1813 Apr 28 22:18	19°♊20'58	
morning rise	1806 Nov 11 04:22	3°♈18'04		opposition	1813 Jul 08 17:05	16°♊02'11	0°17'33
retrograde	1807 Feb 18 17:57	10°♈27'51		min. Earth dist.	1813 Jul 08 20:05	16°♊01'37	9.02392 AU
opposition	1807 Apr 28 09:50	7°♈09'25	2°40'59	direct	1813 Sep 17 08:00	12°♊43'26	
min. Earth dist.	1807 Apr 28 11:16	7°♈09'09	8.82599 AU	evening set	1813 Dec 26 19:36	19°♊44'09	
direct	1807 Jul 08 06:52	3°♈46'05					
evening set	1807 Oct 20 15:16	11°♈10'04		conjunction	1814 Jan 12 10:59	21°♊41'37	0°00'56
				minimum elong	1814 Jan 12 10:59	21°♊41'37	0°00'56
conjunction	1807 Nov 06 11:48	13°♈10'33	2°06'54	behind sun begin	1814 Jan 12 04:00	21°♊39'35	
minimum elong	1807 Nov 06 11:50	13°♈10'33	2°06'53	behind sun end	1814 Jan 12 17:57	21°♊43'39	
max. Earth dist.	1807 Nov 06 09:22	13°♈09'49	10.86671 AU	max. Earth dist.	1814 Jan 12 07:20	21°♊40'35	11.00689 AU
	1807 Nov 21 18:55	15°♈		desc. node	1814 Jan 24 21:57	23°♊09'54	
morning rise	1807 Nov 23 04:51	15°♈09'59		morning rise	1814 Jan 29 03:06	23°♊39'23	
retrograde	1808 Mar 01 16:22	22°♈15'05			1814 Apr 10 01:02	0°♈	
opposition	1808 May 09 19:57	18°♈57'08	2°28'39	retrograde	1814 May 11 01:36	0°♈46'25	
min. Earth dist.	1808 May 09 21:36	18°♈56'49	8.90630 AU		1814 Jun 11 13:15	30°♈	
direct	1808 Jul 19 22:16	15°♈34'52		opposition	1814 Jul 20 21:54	27°♊26'52	0°-15'-34
evening set	1808 Oct 31 13:37	22°♈52'05		min. Earth dist.	1814 Jul 21 00:53	27°♊26'19	8.98469 AU
				direct	1814 Sep 29 04:14	24°♊08'18	
conjunction	1808 Nov 17 07:58	24°♈51'04	1°54'29		1814 Dec 28 02:01	0°♈	
minimum elong	1808 Nov 17 08:01	24°♈51'05	1°54'28	evening set	1815 Jan 07 06:43	1°♈10'01	
max. Earth dist.	1808 Nov 17 05:33	24°♈50'21	10.93924 AU				
morning rise	1808 Dec 03 23:16	26°♈49'12		conjunction	1815 Jan 23 22:35	3°♈08'15	0°-26'-9
	1809 Jan 02 01:59	0°♈		minimum elong	1815 Jan 23 22:34	3°♈08'14	0°26'10
retrograde	1809 Mar 13 13:46	3°♈50'58		max. Earth dist.	1815 Jan 23 18:10	3°♈06'56	10.95774 AU
opposition	1809 May 22 03:03	0°♈33'16	2°10'25	morning rise	1815 Feb 09 16:14	5°♈07'02	
min. Earth dist.	1809 May 22 04:50	0°♈32'56	8.96996 AU	retrograde	1815 May 23 08:08	12°♈19'33	
	1809 May 29 14:26	30°♈		opposition	1815 Aug 02 05:22	8°♈59'04	0°-48'-27
direct	1809 Aug 01 08:20	27°♈11'59		min. Earth dist.	1815 Aug 02 08:54	8°♈58'24	8.92598 AU
	1809 Sep 30 22:57	0°♈		direct	1815 Oct 11 00:31	5°♈40'28	
evening set	1809 Nov 12 05:48	4°♈23'19		evening set	1816 Jan 18 21:42	12°♈44'40	
conjunction	1809 Nov 28 22:35	6°♈21'14	1°37'34	conjunction	1816 Feb 04 14:26	14°♈43'59	0°-52'-26
minimum elong	1809 Nov 28 22:37	6°♈21'15	1°37'34	minimum elong	1816 Feb 04 14:25	14°♈43'58	0°52'27
max. Earth dist.	1809 Nov 28 20:05	6°♈20'29	10.99395 AU	max. Earth dist.	1816 Feb 04 10:02	14°♈42'39	10.89001 AU
morning rise	1809 Dec 15 12:53	8°♈18'30			1816 Feb 06 19:52	15°♈	
retrograde	1810 Mar 25 09:41	15°♈18'17		morning rise	1816 Feb 21 09:51	16°♈44'05	
opposition	1810 Jun 03 07:50	12°♈00'38	1°47'13	retrograde	1816 Jun 03 19:22	24°♈03'26	
min. Earth dist.	1810 Jun 03 10:28	12°♈00'09	9.01476 AU	opposition	1816 Aug 13 16:17	20°♈41'50	-1°-19'-51
direct	1810 Aug 13 11:38	8°♈40'13		min. Earth dist.	1816 Aug 13 19:32	20°♈41'13	8.85001 AU
evening set	1810 Nov 23 17:44	15°♈46'50		direct	1816 Oct 22 01:01	17°♈22'59	
				evening set	1817 Jan 29 18:07	24°♈31'06	
conjunction	1810 Dec 10 09:23	17°♈44'04	1°16'55				
minimum elong	1810 Dec 10 09:25	17°♈44'05	1°16'55	conjunction	1817 Feb 15 12:18	26°♈31'50	-1°-16'-55
max. Earth dist.	1810 Dec 10 05:44	17°♈43'00	11.02899 AU	minimum elong	1817 Feb 15 12:15	26°♈31'50	1°16'55
morning rise	1810 Dec 26 23:32	19°♈40'54		max. Earth dist.	1817 Feb 15 09:02	26°♈30'51	10.80628 AU
retrograde	1811 Apr 06 03:23	26°♈40'11		morning rise	1817 Mar 04 09:39	28°♈33'33	
opposition	1811 Jun 15 10:58	23°♈22'23	1°20'00		1817 Mar 16 19:58	0°♈	
min. Earth dist.	1811 Jun 15 14:37	23°♈21'42	9.03919 AU	retrograde	1817 Jun 16 15:28	6°♈00'48	
direct	1811 Aug 25 12:42	20°♈02'39		opposition	1817 Aug 26 07:18	2°♈37'58	-1°-48'-28
evening set	1811 Dec 05 02:55	27°♈05'55		min. Earth dist.	1817 Aug 26 09:31	2°♈37'33	8.75977 AU
					1817 Oct 05 09:45	30°♈	
conjunction	1811 Dec 21 17:59	29°♈02'51	0°53'21	direct	1817 Nov 03 04:34	29°♈18'40	
minimum elong	1811 Dec 21 18:01	29°♈02'52	0°53'21		1817 Dec 01 10:30	0°♈	
max. Earth dist.	1811 Dec 21 13:25	29°♈01'30	11.04311 AU	evening set	1818 Feb 10 21:21	6°♈32'01	
	1811 Dec 29 19:53	0°♊					
morning rise	1812 Jan 07 08:29	0°♊59'38		conjunction	1818 Feb 27 17:25	8°♈34'28	-1°-38'-28
retrograde	1812 Apr 16 23:44	7°♊59'58		minimum elong	1818 Feb 27 17:22	8°♈34'27	1°38'29
opposition	1812 Jun 26 13:44	4°♊41'47	0°49'46	max. Earth dist.	1818 Feb 27 15:18	8°♈33'49	10.70986 AU
min. Earth dist.	1812 Jun 26 17:20	4°♊41'07	9.04230 AU	morning rise	1818 Mar 16 17:06	10°♈38'06	
direct	1812 Sep 05 11:43	1°♊22'38		retrograde	1818 Jun 29 17:54	18°♈13'58	
evening set	1812 Dec 15 10:50	8°♊23'53		opposition	1818 Sep 08 03:08	14°♈49'52	-2°-12'-54
				min. Earth dist.	1818 Sep 08 04:18	14°♈49'39	8.65878 AU
conjunction	1813 Jan 01 01:55	10°♊20'55	0°27'44	direct	1818 Nov 15 11:22	11°♈29'55	
minimum elong	1813 Jan 01 01:55	10°♊20'55	0°27'43	evening set	1819 Feb 23 08:42	18°♈49'39	
max. Earth dist.	1812 Dec 31 21:57	10°♊19'45	11.03569 AU				
morning rise	1813 Jan 17 17:02	12°♊18'01		conjunction	1819 Mar 12 07:01	20°♈54'07	-1°-55'-58



minimum elong	1819 Mar 12 06:58	20° <del>✕</del> 54'06	1°56'00	max. Earth dist.	1825 Jun 02 08:19	11° <del>II</del> 19'36	10.06393 AU
max. Earth dist.	1819 Mar 12 05:02	20° <del>✕</del> 53'30	10.60472 AU	morning rise	1825 Jun 20 06:54	13° <del>II</del> 38'33	
morning rise	1819 Mar 29 09:34	22° <del>✕</del> 59'54		retrograde	1825 Oct 04 12:11	21° <del>II</del> 57'09	
	1819 Jun 13 02:58	0° <del>Y</del>		opposition	1825 Dec 10 17:44	18° <del>II</del> 27'43	-1°-33'-14
retrograde	1819 Jul 13 02:59	0° <del>Y</del> 44'46		min. Earth dist.	1825 Dec 10 14:57	18° <del>II</del> 28'17	8.04822 AU
	1819 Aug 12 08:46	30° <del>R</del> <del>✕</del>		direct	1826 Feb 15 05:27	14° <del>II</del> 59'55	
opposition	1819 Sep 21 04:13	27° <del>✕</del> 19'24	-2°-31'-44	evening set	1826 May 30 05:03	23° <del>II</del> 09'36	
min. Earth dist.	1819 Sep 21 05:06	27° <del>✕</del> 19'14	8.55130 AU				
direct	1819 Nov 28 00:38	23° <del>✕</del> 58'35		conjunction	1826 Jun 17 07:27	25° <del>II</del> 30'02	-1°00'-24
	1820 Feb 24 06:33	0° <del>Y</del>		minimum elong	1826 Jun 17 07:30	25° <del>II</del> 30'03	1°00'25
evening set	1820 Mar 07 04:54	1° <del>Y</del> 25'37		max. Earth dist.	1826 Jun 17 10:52	25° <del>II</del> 31'08	10.03833 AU
				morning rise	1826 Jul 05 11:19	27° <del>II</del> 50'56	
conjunction	1820 Mar 24 06:08	3° <del>Y</del> 32'22	-2°-8'-19		1826 Jul 22 20:24	0° <del>☾</del>	
minimum elong	1820 Mar 24 06:06	3° <del>Y</del> 32'21	2°08'21	retrograde	1826 Oct 18 23:58	6° <del>☾</del> 07'38	
max. Earth dist.	1820 Mar 24 04:21	3° <del>Y</del> 31'49	10.49549 AU	opposition	1826 Dec 24 21:54	2° <del>☾</del> 38'34	0°-56'-13
morning rise	1820 Apr 10 12:05	5° <del>Y</del> 40'33		min. Earth dist.	1826 Dec 24 18:59	2° <del>☾</del> 39'11	8.03627 AU
retrograde	1820 Jul 25 19:48	13° <del>Y</del> 34'17			1827 Jan 30 08:19	30° <del>R</del> <del>II</del>	
opposition	1820 Oct 03 10:52	10° <del>Y</del> 07'43	-2°-43'-38	direct	1827 Mar 01 15:07	29° <del>II</del> 09'54	
min. Earth dist.	1820 Oct 03 11:38	10° <del>Y</del> 07'34	8.44201 AU		1827 Mar 31 18:52	0° <del>☾</del>	
direct	1820 Dec 09 20:03	6° <del>Y</del> 45'50		evening set	1827 Jun 14 06:44	7° <del>☾</del> 22'20	
evening set	1821 Mar 20 10:26	14° <del>Y</del> 20'45					
				conjunction	1827 Jul 02 10:58	9° <del>☾</del> 43'13	0°-29'-3
conjunction	1821 Apr 06 15:25	16° <del>Y</del> 30'00	-2°-14'-30	minimum elong	1827 Jul 02 11:00	9° <del>☾</del> 43'13	0°29'04
minimum elong	1821 Apr 06 15:24	16° <del>Y</del> 30'00	2°14'32	max. Earth dist.	1827 Jul 02 14:50	9° <del>☾</del> 44'28	10.04087 AU
max. Earth dist.	1821 Apr 06 14:20	16° <del>Y</del> 29'40	10.38679 AU	morning rise	1827 Jul 20 15:27	12° <del>☾</del> 04'09	
morning rise	1821 Apr 24 01:13	18° <del>Y</del> 40'46		retrograde	1827 Nov 02 07:59	20° <del>☾</del> 16'41	
retrograde	1821 Aug 08 18:23	26° <del>Y</del> 42'46		opposition	1828 Jan 08 01:13	16° <del>☾</del> 48'18	0°-15'-48
opposition	1821 Oct 16 22:50	23° <del>Y</del> 15'06	-2°-47'-25	min. Earth dist.	1828 Jan 07 21:53	16° <del>☾</del> 48'59	8.05262 AU
min. Earth dist.	1821 Oct 16 23:19	23° <del>Y</del> 15'00	8.33543 AU	direct	1828 Mar 15 02:58	13° <del>☾</del> 19'00	
direct	1821 Dec 22 23:08	19° <del>Y</del> 52'03		asc. node	1828 Jun 01 08:57	18° <del>☾</del> 17'07	
evening set	1822 Apr 03 01:49	27° <del>Y</del> 35'11		evening set	1828 Jun 28 08:41	21° <del>☾</del> 32'08	
conjunction	1822 Apr 20 11:12	29° <del>Y</del> 47'06	-2°-13'-45	conjunction	1828 Jul 16 13:08	23° <del>☾</del> 52'33	0°04'00
minimum elong	1822 Apr 20 11:13	29° <del>Y</del> 47'07	2°13'46	minimum elong	1828 Jul 16 13:07	23° <del>☾</del> 52'33	0°04'00
max. Earth dist.	1822 Apr 20 11:19	29° <del>Y</del> 47'09	10.28329 AU	behind sun begin	1828 Jul 16 05:52	23° <del>☾</del> 50'13	
	1822 Apr 22 03:41	0° <del>♄</del>		behind sun end	1828 Jul 16 20:23	23° <del>☾</del> 54'53	
morning rise	1822 May 08 01:05	2° <del>♄</del> 00'30		max. Earth dist.	1828 Jul 16 17:27	23° <del>☾</del> 53'55	10.07116 AU
retrograde	1822 Aug 22 22:47	10° <del>♄</del> 09'41		morning rise	1828 Aug 03 16:27	26° <del>☾</del> 12'34	
opposition	1822 Oct 30 15:44	6° <del>♄</del> 41'08	-2°-42'-14		1828 Sep 04 15:00	0° <del>♁</del>	
min. Earth dist.	1822 Oct 30 15:17	6° <del>♄</del> 41'13	8.23666 AU	retrograde	1828 Nov 15 11:12	4° <del>♁</del> 19'00	
direct	1823 Jan 05 09:30	3° <del>♄</del> 16'52		opposition	1829 Jan 21 02:10	0° <del>♁</del> 51'33	0°25'14
evening set	1823 Apr 17 02:47	11° <del>♄</del> 08'07		min. Earth dist.	1829 Jan 20 22:23	0° <del>♁</del> 52'20	8.09596 AU
					1829 Jan 31 15:23	30° <del>R</del> <del>☾</del>	
conjunction	1823 May 04 16:56	13° <del>♄</del> 22'45	-2°-5'-38	direct	1829 Mar 29 14:04	27° <del>☾</del> 21'57	
minimum elong	1823 May 04 16:58	13° <del>♄</del> 22'45	2°05'39		1829 May 24 03:58	0° <del>♁</del>	
max. Earth dist.	1823 May 04 18:18	13° <del>♄</del> 23'11	10.19086 AU	evening set	1829 Jul 13 07:55	5° <del>♁</del> 33'44	
	1823 May 17 08:39	15° <del>♄</del>					
morning rise	1823 May 22 11:05	15° <del>♄</del> 38'42		conjunction	1829 Jul 31 10:48	7° <del>♁</del> 52'47	0°36'24
retrograde	1823 Sep 06 08:29	23° <del>♄</del> 53'24		minimum elong	1829 Jul 31 10:47	7° <del>♁</del> 52'46	0°36'24
opposition	1823 Nov 13 13:20	20° <del>♄</del> 24'14	-2°-27'-46	max. Earth dist.	1829 Jul 31 15:27	7° <del>♁</del> 54'17	10.12693 AU
min. Earth dist.	1823 Nov 13 11:40	20° <del>♄</del> 24'34	8.15208 AU	morning rise	1829 Aug 18 11:16	10° <del>♁</del> 11'02	
direct	1824 Jan 19 02:04	16° <del>♄</del> 58'45			1829 Sep 29 18:31	15° <del>♁</del>	
evening set	1824 Apr 30 12:34	24° <del>♄</del> 57'25		retrograde	1829 Nov 29 09:16	18° <del>♁</del> 10'01	
					1830 Jan 31 15:52	15° <del>R</del> <del>♁</del>	
conjunction	1824 May 18 07:28	27° <del>♄</del> 14'32	-1°-50'-11	opposition	1830 Feb 03 23:48	14° <del>♁</del> 43'41	1°04'14
minimum elong	1824 May 18 07:31	27° <del>♄</del> 14'33	1°50'12	min. Earth dist.	1830 Feb 03 19:39	14° <del>♁</del> 44'32	8.16322 AU
max. Earth dist.	1824 May 18 09:53	27° <del>♄</del> 15'19	10.11597 AU	direct	1830 Apr 12 23:28	11° <del>♁</del> 14'07	
morning rise	1824 Jun 05 05:43	29° <del>♄</del> 32'45			1830 Jun 19 23:22	15° <del>♁</del>	
	1824 Jun 08 20:14	0° <del>II</del>		evening set	1830 Jul 28 01:33	19° <del>♁</del> 22'36	
retrograde	1824 Sep 19 22:09	7° <del>II</del> 50'42					
opposition	1824 Nov 26 14:29	4° <del>II</del> 21'13	-2°-4'-23	conjunction	1830 Aug 15 01:20	21° <del>♁</del> 39'32	1°06'18
min. Earth dist.	1824 Nov 26 12:01	4° <del>II</del> 21'43	8.08774 AU	minimum elong	1830 Aug 15 01:17	21° <del>♁</del> 39'31	1°06'18
direct	1825 Feb 01 00:13	0° <del>II</del> 54'31		max. Earth dist.	1830 Aug 15 06:14	21° <del>♁</del> 41'06	10.20442 AU
evening set	1825 May 15 06:05	8° <del>II</del> 59'29		morning rise	1830 Sep 01 21:35	23° <del>♁</del> 55'22	
					1830 Oct 29 11:10	0° <del>♊</del>	
conjunction	1825 Jun 02 05:14	11° <del>II</del> 18'36	-1°-28'-1	retrograde	1830 Dec 12 23:55	1° <del>♊</del> 46'06	
minimum elong	1825 Jun 02 05:18	11° <del>II</del> 18'38	1°28'02		1831 Jan 27 10:34	30° <del>R</del> <del>♁</del>	



opposition	1831 Feb 17 17:08	28° $\Omega$ 21'01	1°38'50	opposition	1837 May 04 13:52	13° $\mathbb{M}$ 50'46	2°34'57
min. Earth dist.	1831 Feb 17 13:08	28° $\Omega$ 21'50	8.25006 AU	min. Earth dist.	1837 May 04 14:30	13° $\mathbb{M}$ 50'38	8.87733 AU
direct	1831 Apr 27 05:30	24° $\Omega$ 51'48		direct	1837 Jul 14 12:51	10° $\mathbb{M}$ 28'11	
	1831 Jul 17 18:21	0° $\mathbb{M}$			1837 Oct 01 06:43	15° $\mathbb{M}$	
evening set	1831 Aug 11 11:38	2° $\mathbb{M}$ 55'20		evening set	1837 Oct 26 13:14	17° $\mathbb{M}$ 48'08	
conjunction	1831 Aug 29 07:14	5° $\mathbb{M}$ 09'39	1°32'00	conjunction	1837 Nov 12 08:29	19° $\mathbb{M}$ 47'41	2°00'40
minimum elong	1831 Aug 29 07:11	5° $\mathbb{M}$ 09'38	1°32'00	minimum elong	1837 Nov 12 08:31	19° $\mathbb{M}$ 47'42	2°00'40
max. Earth dist.	1831 Aug 29 11:46	5° $\mathbb{M}$ 11'05	10.29885 AU	max. Earth dist.	1837 Nov 12 07:05	19° $\mathbb{M}$ 47'16	10.91584 AU
morning rise	1831 Sep 15 22:32	7° $\mathbb{M}$ 22'40		morning rise	1837 Nov 29 00:27	21° $\mathbb{M}$ 46'17	
retrograde	1831 Dec 26 06:55	15° $\mathbb{M}$ 04'47		retrograde	1838 Mar 08 13:28	28° $\mathbb{M}$ 49'08	
opposition	1832 Mar 02 05:20	11° $\mathbb{M}$ 41'02	2°07'15	opposition	1838 May 16 22:10	25° $\mathbb{M}$ 31'39	2°19'16
min. Earth dist.	1832 Mar 02 02:20	11° $\mathbb{M}$ 41'38	8.35128 AU	min. Earth dist.	1838 May 17 00:02	25° $\mathbb{M}$ 31'19	8.95256 AU
direct	1832 May 10 06:30	8° $\mathbb{M}$ 12'27		direct	1838 Jul 27 01:21	22° $\mathbb{M}$ 10'16	
evening set	1832 Aug 24 12:37	16° $\mathbb{M}$ 09'46		evening set	1838 Nov 07 07:59	29° $\mathbb{M}$ 23'58	
					1838 Nov 12 11:24	0° $\mathbb{A}$	
conjunction	1832 Sep 11 03:21	18° $\mathbb{M}$ 21'12	1°52'16	conjunction	1838 Nov 24 01:17	1° $\mathbb{A}$ 22'14	1°45'42
minimum elong	1832 Sep 11 03:18	18° $\mathbb{M}$ 21'11	1°52'17	minimum elong	1838 Nov 24 01:20	1° $\mathbb{A}$ 22'14	1°45'42
max. Earth dist.	1832 Sep 11 06:33	18° $\mathbb{M}$ 22'12	10.40475 AU	max. Earth dist.	1838 Nov 23 22:34	1° $\mathbb{A}$ 21'25	10.98242 AU
morning rise	1832 Sep 28 13:30	20° $\mathbb{M}$ 31'13		morning rise	1838 Dec 10 16:07	3° $\mathbb{A}$ 19'46	
retrograde	1833 Jan 07 07:00	28° $\mathbb{M}$ 04'50		retrograde	1839 Mar 20 09:23	10° $\mathbb{A}$ 20'00	
opposition	1833 Mar 15 12:22	24° $\mathbb{M}$ 42'27	2°28'20	opposition	1839 May 29 03:42	7° $\mathbb{A}$ 02'49	1°58'13
min. Earth dist.	1833 Mar 15 10:23	24° $\mathbb{M}$ 42'51	8.46114 AU	min. Earth dist.	1839 May 29 05:49	7° $\mathbb{A}$ 02'26	9.00939 AU
direct	1833 May 24 01:26	21° $\mathbb{M}$ 14'48		direct	1839 Aug 08 07:56	3° $\mathbb{A}$ 42'30	
evening set	1833 Sep 07 03:24	29° $\mathbb{M}$ 04'56		evening set	1839 Nov 18 21:43	10° $\mathbb{A}$ 50'57	
	1833 Sep 14 15:33	0° $\mathbb{A}$					
conjunction	1833 Sep 24 13:10	1° $\mathbb{A}$ 13'28	2°06'24	conjunction	1839 Dec 05 13:49	12° $\mathbb{A}$ 48'21	1°26'40
minimum elong	1833 Sep 24 13:08	1° $\mathbb{A}$ 13'27	2°06'25	minimum elong	1839 Dec 05 13:51	12° $\mathbb{A}$ 48'21	1°26'40
max. Earth dist.	1833 Sep 24 14:55	1° $\mathbb{A}$ 14'00	10.51645 AU	max. Earth dist.	1839 Dec 05 10:59	12° $\mathbb{A}$ 47'30	11.02942 AU
morning rise	1833 Oct 11 18:22	3° $\mathbb{A}$ 20'34		morning rise	1839 Dec 22 03:59	14° $\mathbb{A}$ 45'14	
retrograde	1834 Jan 19 22:32	10° $\mathbb{A}$ 46'10		retrograde	1840 Mar 31 04:22	21° $\mathbb{A}$ 44'17	
opposition	1834 Mar 28 14:01	7° $\mathbb{A}$ 25'05	2°41'31	opposition	1840 Jun 09 07:22	18° $\mathbb{A}$ 27'08	1°32'43
min. Earth dist.	1834 Mar 28 12:36	7° $\mathbb{A}$ 25'21	8.57392 AU	min. Earth dist.	1840 Jun 09 09:36	18° $\mathbb{A}$ 26'43	9.04550 AU
direct	1834 Jun 06 15:10	3° $\mathbb{A}$ 58'34		direct	1840 Aug 19 10:47	15° $\mathbb{A}$ 07'42	
evening set	1834 Sep 20 07:51	11° $\mathbb{A}$ 41'01		evening set	1840 Nov 29 08:02	22° $\mathbb{A}$ 12'05	
conjunction	1834 Oct 07 13:03	13° $\mathbb{A}$ 46'48	2°14'07	conjunction	1840 Dec 15 23:24	24° $\mathbb{A}$ 09'01	1°04'20
minimum elong	1834 Oct 07 13:02	13° $\mathbb{A}$ 46'47	2°14'07	minimum elong	1840 Dec 15 23:26	24° $\mathbb{A}$ 09'02	1°04'20
max. Earth dist.	1834 Oct 07 13:48	13° $\mathbb{A}$ 47'01	10.62840 AU	max. Earth dist.	1840 Dec 15 20:23	24° $\mathbb{A}$ 08'08	11.05484 AU
morning rise	1834 Oct 24 13:47	15° $\mathbb{A}$ 51'13		morning rise	1841 Jan 01 13:29	26° $\mathbb{A}$ 05'38	
retrograde	1835 Feb 01 08:39	23° $\mathbb{A}$ 09'33			1841 Feb 07 17:33	0° $\mathbb{B}$	
opposition	1835 Apr 10 10:23	19° $\mathbb{A}$ 49'38	2°46'45	retrograde	1841 Apr 12 01:12	3° $\mathbb{B}$ 05'01	
min. Earth dist.	1835 Apr 10 09:03	19° $\mathbb{A}$ 49'53	8.68414 AU		1841 Jun 18 15:07	30° $\mathbb{R}$ $\mathbb{A}$	
direct	1835 Jun 19 22:06	16° $\mathbb{A}$ 24'24		opposition	1841 Jun 21 10:22	29° $\mathbb{A}$ 47'38	1°03'46
evening set	1835 Oct 03 02:17	23° $\mathbb{A}$ 59'02		min. Earth dist.	1841 Jun 21 13:23	29° $\mathbb{A}$ 47'04	9.05929 AU
				direct	1841 Aug 31 09:43	26° $\mathbb{A}$ 28'51	
conjunction	1835 Oct 20 03:37	26° $\mathbb{A}$ 02'22	2°15'28		1841 Nov 07 18:39	0° $\mathbb{B}$	
minimum elong	1835 Oct 20 03:37	26° $\mathbb{A}$ 02'22	2°15'28	evening set	1841 Dec 10 16:28	3° $\mathbb{B}$ 30'32	
max. Earth dist.	1835 Oct 20 04:13	26° $\mathbb{A}$ 02'33	10.73532 AU				
morning rise	1835 Nov 06 00:32	28° $\mathbb{A}$ 04'25		conjunction	1841 Dec 27 07:26	5° $\mathbb{B}$ 27'22	0°39'34
	1835 Nov 22 17:37	0° $\mathbb{M}$		minimum elong	1841 Dec 27 07:28	5° $\mathbb{B}$ 27'23	0°39'33
retrograde	1836 Feb 13 15:38	5° $\mathbb{M}$ 16'26		max. Earth dist.	1841 Dec 27 02:54	5° $\mathbb{B}$ 26'02	11.05724 AU
opposition	1836 Apr 22 02:08	1° $\mathbb{M}$ 57'32	2°44'22	morning rise	1842 Jan 12 22:08	7° $\mathbb{B}$ 24'10	
min. Earth dist.	1836 Apr 22 01:30	1° $\mathbb{M}$ 57'39	8.78670 AU	retrograde	1842 Apr 23 21:24	14° $\mathbb{B}$ 25'25	
	1836 May 19 13:24	30° $\mathbb{R}$ $\mathbb{A}$		opposition	1842 Jul 03 13:28	11° $\mathbb{B}$ 07'31	0°32'22
direct	1836 Jul 01 20:47	28° $\mathbb{A}$ 33'40		min. Earth dist.	1842 Jul 03 17:51	11° $\mathbb{B}$ 06'43	9.04964 AU
	1836 Aug 13 09:18	0° $\mathbb{M}$		direct	1842 Sep 12 05:58	7° $\mathbb{B}$ 49'09	
evening set	1836 Oct 14 11:43	6° $\mathbb{M}$ 00'40		evening set	1842 Dec 22 00:56	14° $\mathbb{B}$ 49'44	
conjunction	1836 Oct 31 09:42	8° $\mathbb{M}$ 01'55	2°10'48	conjunction	1843 Jan 07 15:56	16° $\mathbb{B}$ 46'50	0°13'13
minimum elong	1836 Oct 31 09:43	8° $\mathbb{M}$ 01'55	2°10'48	minimum elong	1843 Jan 07 15:57	16° $\mathbb{B}$ 46'50	0°13'13
max. Earth dist.	1836 Oct 31 09:44	8° $\mathbb{M}$ 01'56	10.83241 AU	behind sun begin	1843 Jan 07 11:45	16° $\mathbb{B}$ 45'37	
morning rise	1836 Nov 17 03:38	10° $\mathbb{M}$ 02'01		behind sun end	1843 Jan 07 20:09	16° $\mathbb{B}$ 48'04	
	1837 Jan 04 14:29	15° $\mathbb{M}$		max. Earth dist.	1843 Jan 07 10:15	16° $\mathbb{B}$ 45'10	11.03600 AU
retrograde	1837 Feb 24 15:58	17° $\mathbb{M}$ 08'49		morning rise	1843 Jan 24 07:38	18° $\mathbb{B}$ 44'09	
	1837 Apr 18 22:20	15° $\mathbb{R}$ $\mathbb{M}$		retrograde	1843 May 05 21:46	25° $\mathbb{B}$ 48'55	



desc. node	1843 Jul 10 14:28	22°☾52'55		max. Earth dist.	1849 Mar 18 15:32	28°☿01'26	10.52891 AU
opposition	1843 Jul 15 17:30	22°☾30'16	0°00'-26		1849 Apr 03 15:18	0°☿	
min. Earth dist.	1843 Jul 15 22:18	22°☾29'23	9.01665 AU	morning rise	1849 Apr 04 22:01	0°☿09'21	
direct	1843 Sep 24 04:02	19°☾12'03		retrograde	1849 Jul 19 22:55	7°☿59'41	
evening set	1844 Jan 02 10:57	26°☾13'04		opposition	1849 Sep 27 19:20	4°☿33'01	-2°-39'-16
				min. Earth dist.	1849 Sep 27 20:29	4°☿32'47	8.47311 AU
conjunction	1844 Jan 19 02:30	28°☾10'51	0°-13'-52	direct	1849 Dec 04 10:43	1°☿11'00	
minimum elong	1844 Jan 19 02:29	28°☾10'51	0°13'53	evening set	1850 Mar 14 19:09	8°☿42'55	
behind sun begin	1844 Jan 18 22:44	28°☾09'44					
behind sun end	1844 Jan 19 06:15	28°☾11'57		conjunction	1850 Mar 31 22:33	10°☿51'15	-2°-12'-33
max. Earth dist.	1844 Jan 18 21:08	28°☾09'16	10.99201 AU	minimum elong	1850 Mar 31 22:32	10°☿51'15	2°12'34
	1844 Feb 03 12:15	0°☿		max. Earth dist.	1850 Mar 31 21:19	10°☿50'52	10.41558 AU
morning rise	1844 Feb 04 19:22	0°☿09'03		morning rise	1850 Apr 18 06:29	13°☿01'03	
retrograde	1844 May 17 02:56	7°☿18'49		retrograde	1850 Aug 02 19:55	21°☿00'11	
opposition	1844 Jul 26 23:52	3°☿59'09	0°-33'-33	opposition	1850 Oct 11 05:11	17°☿32'17	-2°-46'-53
min. Earth dist.	1844 Jul 27 04:01	3°☿58'23	8.96202 AU	min. Earth dist.	1850 Oct 11 05:20	17°☿32'15	8.36175 AU
direct	1844 Oct 05 00:52	0°☿40'53		direct	1850 Dec 17 09:28	14°☿09'06	
evening set	1845 Jan 13 00:03	7°☿43'46		evening set	1851 Mar 28 06:20	21°☿49'18	
conjunction	1845 Jan 29 16:27	9°☿42'31	0°-40'-36	conjunction	1851 Apr 14 13:39	24°☿00'15	-2°-15'-2
minimum elong	1845 Jan 29 16:26	9°☿42'31	0°40'37	minimum elong	1851 Apr 14 13:39	24°☿00'16	2°15'03
max. Earth dist.	1845 Jan 29 11:36	9°☿41'05	10.92745 AU	max. Earth dist.	1851 Apr 14 13:00	24°☿00'03	10.30720 AU
morning rise	1845 Feb 15 10:50	11°☿41'57		morning rise	1851 May 02 01:41	26°☿12'43	
	1845 Mar 17 15:23	15°☿			1851 Jun 03 16:12	0°☿	
retrograde	1845 May 29 13:05	18°☿58'05		retrograde	1851 Aug 16 22:22	4°☿19'43	
opposition	1845 Aug 08 09:19	15°☿37'10	-1°-5'-47	opposition	1851 Oct 24 20:27	0°☿50'49	-2°-45'-51
min. Earth dist.	1845 Aug 08 13:05	15°☿36'28	8.88828 AU	min. Earth dist.	1851 Oct 24 20:01	0°☿50'54	8.25812 AU
	1845 Aug 16 17:21	15°☿			1851 Nov 04 12:00	30°☿	
direct	1845 Oct 16 23:21	12°☿18'34		direct	1851 Dec 30 16:38	27°☿26'26	
	1845 Dec 13 20:03	15°☿			1852 Feb 22 17:37	0°☿	
evening set	1846 Jan 24 18:08	19°☿24'49		evening set	1852 Apr 10 03:18	5°☿14'52	
conjunction	1846 Feb 10 11:36	21°☿24'53	-1°-6'-2	conjunction	1852 Apr 27 15:10	7°☿28'32	-2°-10'-15
minimum elong	1846 Feb 10 11:34	21°☿24'52	1°06'03	minimum elong	1852 Apr 27 15:12	7°☿28'33	2°10'17
max. Earth dist.	1846 Feb 10 06:21	21°☿23'18	10.84517 AU	max. Earth dist.	1852 Apr 27 15:25	7°☿28'37	10.20967 AU
morning rise	1846 Feb 27 07:58	23°☿25'51		morning rise	1852 May 15 07:35	9°☿43'38	
	1846 May 10 07:08	0°☿			1852 Jul 01 11:58	15°☿	
retrograde	1846 Jun 11 05:43	0°☿49'27		retrograde	1852 Aug 30 06:18	17°☿56'56	
	1846 Jul 13 13:08	30°☿			1852 Oct 30 22:57	15°☿	
opposition	1846 Aug 20 22:28	27°☿27'10	-1°-35'-51	opposition	1852 Nov 06 16:32	14°☿27'19	-2°-35'-33
min. Earth dist.	1846 Aug 21 02:25	27°☿26'25	8.79858 AU	min. Earth dist.	1852 Nov 06 15:35	14°☿27'31	8.16805 AU
direct	1846 Oct 29 00:32	24°☿07'57		direct	1853 Jan 12 06:43	11°☿01'43	
	1847 Jan 25 11:29	0°☿			1853 Mar 21 15:25	15°☿	
evening set	1847 Feb 05 18:16	1°☿18'58		evening set	1853 Apr 24 09:33	18°☿57'55	
conjunction	1847 Feb 22 13:17	3°☿20'39	-1°-29'-5	conjunction	1853 May 12 02:17	21°☿14'10	-1°-58'-3
minimum elong	1847 Feb 22 13:14	3°☿20'39	1°29'05	minimum elong	1853 May 12 02:20	21°☿14'11	1°58'04
max. Earth dist.	1847 Feb 22 08:04	3°☿19'04	10.74858 AU	max. Earth dist.	1853 May 12 04:03	21°☿14'45	10.12859 AU
morning rise	1847 Mar 11 11:58	5°☿23'27		morning rise	1853 May 29 22:59	23°☿31'42	
retrograde	1847 Jun 24 03:05	12°☿55'29			1853 Jul 29 20:06	0°☿	
opposition	1847 Sep 02 16:15	9°☿31'44	-2°-2'-24	retrograde	1853 Sep 13 18:18	1°☿49'12	
min. Earth dist.	1847 Sep 02 20:00	9°☿31'01	8.69655 AU		1853 Oct 30 06:50	30°☿	
direct	1847 Nov 10 06:31	6°☿11'43		opposition	1853 Nov 20 16:35	28°☿19'14	-2°-16'-3
evening set	1848 Feb 18 01:39	13°☿28'46		min. Earth dist.	1853 Nov 20 14:35	28°☿19'39	8.09687 AU
				direct	1854 Jan 26 03:34	24°☿52'31	
conjunction	1848 Mar 05 22:51	15°☿32'22	-1°-48'-35		1854 Apr 14 22:21	0°☿	
minimum elong	1848 Mar 05 22:49	15°☿32'22	1°48'36	evening set	1854 May 09 00:01	2°☿55'31	
max. Earth dist.	1848 Mar 05 19:04	15°☿31'13	10.64163 AU				
morning rise	1848 Mar 23 00:08	17°☿37'16		conjunction	1854 May 26 21:23	5°☿14'00	-1°-38'-46
retrograde	1848 Jul 06 08:31	25°☿18'23		minimum elong	1854 May 26 21:26	5°☿14'01	1°38'47
opposition	1848 Sep 14 15:09	21°☿53'08	-2°-24'00	max. Earth dist.	1854 May 27 00:49	5°☿15'07	10.06891 AU
min. Earth dist.	1848 Sep 14 17:45	21°☿52'38	8.58646 AU	morning rise	1854 Jun 13 21:45	7°☿33'28	
direct	1848 Nov 21 18:30	18°☿32'11		retrograde	1854 Sep 28 07:56	15°☿52'46	
evening set	1849 Mar 01 17:42	25°☿56'16		opposition	1854 Dec 04 19:21	12°☿22'50	-1°-48'-8
				min. Earth dist.	1854 Dec 04 16:06	12°☿23'30	8.04917 AU
conjunction	1849 Mar 18 17:43	28°☿02'07	-2°-3'-26	direct	1855 Feb 09 07:04	8°☿55'09	
minimum elong	1849 Mar 18 17:41	28°☿02'06	2°03'27	evening set	1855 May 23 20:58	17°☿03'31	



conjunction	1855 Jun 10 22:12	19°II23'38	-1°-13'-22	evening set	1861 Aug 18 19:31	10°II40'00	
minimum elong	1855 Jun 10 22:16	19°II23'39	1°13'23				
max. Earth dist.	1855 Jun 11 03:15	19°II25'17	10.03471 AU	conjunction	1861 Sep 05 12:24	12°II52'39	1°44'00
morning rise	1855 Jun 29 01:16	21°II44'23		minimum elong	1861 Sep 05 12:21	12°II52'38	1°44'00
	1855 Oct 05 15:35	0°II		max. Earth dist.	1861 Sep 05 15:51	12°II53'44	10.36650 AU
retrograde	1855 Oct 12 21:11	0°II02'56		morning rise	1861 Sep 23 00:55	15°II03'57	
	1855 Oct 20 03:19	30°RII		retrograde	1862 Jan 02 00:57	22°II41'16	
opposition	1855 Dec 18 23:38	26°II33'23	-1°-13'-23	opposition	1862 Mar 10 02:53	19°II18'47	2°19'53
min. Earth dist.	1855 Dec 18 19:11	26°II34'18	8.02836 AU	min. Earth dist.	1862 Mar 09 23:49	19°II19'24	8.42139 AU
direct	1856 Feb 23 14:25	23°II04'57		direct	1862 May 18 10:44	15°II51'14	
	1856 May 27 17:13	0°II		evening set	1862 Sep 01 14:59	23°II44'33	
evening set	1856 Jun 06 22:10	1°II16'55					
				conjunction	1862 Sep 19 03:05	25°II54'20	2°00'53
conjunction	1856 Jun 25 02:00	3°II37'53	0°-43'-23	minimum elong	1862 Sep 19 03:02	25°II54'19	2°00'53
minimum elong	1856 Jun 25 02:03	3°II37'54	0°43'24	max. Earth dist.	1862 Sep 19 05:39	25°II55'08	10.47545 AU
max. Earth dist.	1856 Jun 25 08:10	3°II39'54	10.02840 AU	morning rise	1862 Oct 06 10:22	28°II02'40	
morning rise	1856 Jul 13 06:22	5°II59'03			1862 Oct 22 23:06	0°II	
retrograde	1856 Oct 26 08:43	14°II14'23		retrograde	1863 Jan 14 21:48	5°II31'49	
opposition	1857 Jan 01 03:55	10°II45'36	0°-34'-4	opposition	1863 Mar 23 07:10	2°II10'37	2°36'33
min. Earth dist.	1856 Dec 31 22:59	10°II46'37	8.03597 AU	min. Earth dist.	1863 Mar 23 05:25	2°II10'58	8.53135 AU
direct	1857 Mar 09 00:22	7°II16'37			1863 Apr 22 10:54	30°RII	
evening set	1857 Jun 22 01:07	15°II30'13		direct	1863 Jun 01 02:00	28°II44'03	
					1863 Jul 10 08:32	0°II	
conjunction	1857 Jul 10 05:48	17°II51'05	0°-10'-50	evening set	1863 Sep 15 00:30	6°II30'02	
minimum elong	1857 Jul 10 05:48	17°II51'05	0°10'51				
behind sun begin	1857 Jul 10 00:17	17°II49'19		conjunction	1863 Oct 02 07:51	8°II37'01	2°11'24
behind sun end	1857 Jul 10 11:20	17°II52'52		minimum elong	1863 Oct 02 07:49	8°II37'01	2°11'24
max. Earth dist.	1857 Jul 10 12:11	17°II53'08	10.05043 AU	max. Earth dist.	1863 Oct 02 09:01	8°II37'23	10.58461 AU
morning rise	1857 Jul 28 09:44	20°II11'43		morning rise	1863 Oct 19 10:22	10°II42'35	
retrograde	1857 Nov 09 16:22	28°II21'40		retrograde	1864 Jan 27 10:55	18°II04'15	
asc. node	1857 Nov 11 03:10	28°II21'32		opposition	1864 Apr 04 06:14	14°II44'13	2°45'15
opposition	1858 Jan 15 06:40	24°II53'55	0°07'05	min. Earth dist.	1864 Apr 04 06:11	14°II44'14	8.63923 AU
min. Earth dist.	1858 Jan 15 01:55	24°II54'54	8.07159 AU	direct	1864 Jun 13 11:58	11°II18'44	
direct	1858 Mar 23 11:18	21°II24'41		evening set	1864 Sep 27 00:02	18°II57'08	
evening set	1858 Jul 07 02:37	29°II37'47					
	1858 Jul 10 00:37	0°II		conjunction	1864 Oct 14 03:00	21°II01'34	2°15'30
conjunction	1858 Jul 25 06:21	1°II57'37	0°22'12	minimum elong	1864 Oct 14 03:00	21°II01'33	2°15'29
minimum elong	1858 Jul 25 06:20	1°II57'37	0°22'13	max. Earth dist.	1864 Oct 14 02:16	21°II01'20	10.68967 AU
max. Earth dist.	1858 Jul 25 12:23	1°II59'34	10.09939 AU	morning rise	1864 Oct 31 01:32	23°II04'40	
morning rise	1858 Aug 12 08:12	4°II16'49			1865 Jan 19 10:40	0°III	
retrograde	1858 Nov 23 18:23	12°II19'43		retrograde	1865 Feb 07 18:49	0°III19'42	
opposition	1859 Jan 29 06:38	8°II53'13	0°47'21		1865 Feb 27 07:18	30°RII	
min. Earth dist.	1859 Jan 29 02:13	8°II54'07	8.13293 AU	opposition	1865 Apr 17 00:40	27°II00'38	2°46'08
direct	1859 Apr 06 22:49	5°II24'00		min. Earth dist.	1865 Apr 17 01:42	27°II00'26	8.74083 AU
evening set	1859 Jul 21 23:38	13°II34'30		direct	1865 Jun 26 15:14	23°II36'17	
	1859 Aug 02 05:05	15°II			1865 Sep 29 23:27	0°III	
conjunction	1859 Aug 09 00:50	15°II52'28	0°53'29	evening set	1865 Oct 09 13:54	1°III07'04	
minimum elong	1859 Aug 09 00:47	15°II52'27	0°53'29				
max. Earth dist.	1859 Aug 09 06:09	15°II54'11	10.17198 AU	conjunction	1865 Oct 26 13:11	3°III09'17	2°13'23
morning rise	1859 Aug 26 23:10	18°II09'30		minimum elong	1865 Oct 26 13:12	3°III09'17	2°13'23
retrograde	1859 Dec 07 11:21	26°II04'12		max. Earth dist.	1865 Oct 26 11:07	3°III08'39	10.78655 AU
opposition	1860 Feb 12 02:29	22°II39'03	1°24'10	morning rise	1865 Nov 12 08:32	5°III10'19	
min. Earth dist.	1860 Feb 11 22:29	22°II39'51	8.21571 AU	retrograde	1866 Feb 19 21:11	12°III19'45	
direct	1860 Apr 20 08:28	19°II10'07		opposition	1866 Apr 29 14:40	9°III01'23	2°39'41
evening set	1860 Aug 04 13:59	27°II16'13		min. Earth dist.	1866 Apr 29 15:59	9°III01'07	8.83209 AU
				direct	1866 Jul 09 12:18	5°III38'10	
conjunction	1860 Aug 22 11:24	29°II31'41	1°21'13	evening set	1866 Oct 21 19:13	13°III01'41	
minimum elong	1860 Aug 22 11:21	29°II31'40	1°21'14				
max. Earth dist.	1860 Aug 22 15:40	29°II33'03	10.26312 AU	conjunction	1866 Nov 07 15:42	15°III02'04	2°05'32
	1860 Aug 26 04:30	0°III		minimum elong	1866 Nov 07 15:44	15°III02'05	2°05'32
morning rise	1860 Sep 09 05:08	1°III45'59		max. Earth dist.	1866 Nov 07 08:48	15°III	
retrograde	1860 Dec 19 21:06	9°III31'58		morning rise	1866 Nov 07 13:24	15°III01'23	10.87137 AU
opposition	1861 Feb 24 17:17	6°III08'10	1°55'29	retrograde	1866 Nov 24 08:37	17°III01'26	
min. Earth dist.	1861 Feb 24 13:33	6°III08'55	8.31411 AU	opposition	1867 Mar 03 21:23	24°III06'26	
direct	1861 May 04 13:01	2°III39'48		min. Earth dist.	1867 May 12 00:40	20°III48'31	2°26'37
				direct	1867 May 12 02:17	20°III48'13	8.90938 AU
					1867 Jul 22 03:34	17°III26'22	



evening set	1867 Nov 02 17:17	24° $\mathbb{M}$ 43'18		min. Earth dist.	1873 Jul 22 08:52	29° $\mathfrak{Z}$ 23'17	8.96993 AU
				direct	1873 Sep 30 08:55	26° $\mathfrak{Z}$ 05'17	
conjunction	1867 Nov 19 11:40	26° $\mathbb{M}$ 42'17	1°52'33		1873 Dec 10 21:45	0° $\approx$	
minimum elong	1867 Nov 19 11:42	26° $\mathbb{M}$ 42'18	1°52'34	evening set	1874 Jan 08 12:41	3° $\approx$ 07'47	
max. Earth dist.	1867 Nov 19 09:13	26° $\mathbb{M}$ 41'33	10.94075 AU				
morning rise	1867 Dec 06 02:54	28° $\mathbb{M}$ 40'24		conjunction	1874 Jan 25 04:38	5° $\approx$ 06'15	0°-29'-30
	1867 Dec 17 17:28	0° $\mathfrak{A}$		minimum elong	1874 Jan 25 04:37	5° $\approx$ 06'15	0°29'31
retrograde	1868 Mar 14 18:54	5° $\mathfrak{A}$ 42'13		max. Earth dist.	1874 Jan 24 23:48	5° $\approx$ 04'49	10.94204 AU
opposition	1868 May 23 07:51	2° $\mathfrak{A}$ 24'34	2°07'46	morning rise	1874 Feb 10 22:33	7° $\approx$ 05'17	
min. Earth dist.	1868 May 23 10:27	2° $\mathfrak{A}$ 24'05	8.96980 AU	retrograde	1874 May 24 15:24	14° $\approx$ 19'01	
	1868 Jun 28 11:57	30° $\mathbb{R}$ $\mathbb{M}$		opposition	1874 Aug 03 13:27	10° $\approx$ 58'19	0°-52'-30
direct	1868 Aug 02 11:40	29° $\mathbb{M}$ 03'22		min. Earth dist.	1874 Aug 03 17:09	10° $\approx$ 57'38	8.90946 AU
	1868 Sep 05 22:25	0° $\mathfrak{A}$		direct	1874 Oct 12 08:10	7° $\approx$ 39'34	
evening set	1868 Nov 13 09:31	6° $\mathfrak{A}$ 14'38		evening set	1875 Jan 20 04:38	14° $\approx$ 44'42	
					1875 Jan 22 08:33	15° $\approx$	
conjunction	1868 Nov 30 02:12	8° $\mathfrak{A}$ 12'35	1°35'09				
minimum elong	1868 Nov 30 02:15	8° $\mathfrak{A}$ 12'35	1°35'10	conjunction	1875 Feb 05 21:37	16° $\approx$ 44'17	0°-55'-37
max. Earth dist.	1868 Nov 29 22:39	8° $\mathfrak{A}$ 11'31	10.99216 AU	minimum elong	1875 Feb 05 21:35	16° $\approx$ 44'17	0°55'38
morning rise	1868 Dec 16 16:39	10° $\mathfrak{A}$ 09'55		max. Earth dist.	1875 Feb 05 17:48	16° $\approx$ 43'08	10.87274 AU
retrograde	1869 Mar 26 13:19	17° $\mathfrak{A}$ 09'58		morning rise	1875 Feb 22 17:10	18° $\approx$ 44'40	
opposition	1869 Jun 04 12:53	13° $\mathfrak{A}$ 52'20	1°44'02	retrograde	1875 Jun 06 05:58	26° $\approx$ 05'18	
min. Earth dist.	1869 Jun 04 16:29	13° $\mathfrak{A}$ 51'40	9.01131 AU	opposition	1875 Aug 16 01:01	22° $\approx$ 43'28	-1°-23'-37
direct	1869 Aug 14 16:11	10° $\mathfrak{A}$ 31'56		min. Earth dist.	1875 Aug 16 03:42	22° $\approx$ 42'58	8.83221 AU
evening set	1869 Nov 24 21:31	17° $\mathfrak{A}$ 38'42		direct	1875 Oct 24 09:13	19° $\approx$ 24'28	
				evening set	1876 Feb 01 02:08	26° $\approx$ 33'37	
conjunction	1869 Dec 11 13:10	19° $\mathfrak{A}$ 36'01	1°14'07				
minimum elong	1869 Dec 11 13:12	19° $\mathfrak{A}$ 36'02	1°14'07	conjunction	1876 Feb 17 20:33	28° $\approx$ 34'39	-1°-19'-47
max. Earth dist.	1869 Dec 11 08:38	19° $\mathfrak{A}$ 34'41	11.02395 AU	minimum elong	1876 Feb 17 20:30	28° $\approx$ 34'38	1°19'47
morning rise	1869 Dec 28 03:30	21° $\mathfrak{A}$ 32'57		max. Earth dist.	1876 Feb 17 17:50	28° $\approx$ 33'49	10.78798 AU
retrograde	1870 Apr 07 08:53	28° $\mathfrak{A}$ 32'45			1876 Feb 29 15:08	0° $\mathfrak{H}$	
opposition	1870 Jun 16 16:24	25° $\mathfrak{A}$ 14'53	1°16'23	morning rise	1876 Mar 05 18:02	0° $\mathfrak{H}$ 36'40	
min. Earth dist.	1870 Jun 16 20:12	25° $\mathfrak{A}$ 14'11	9.03254 AU	retrograde	1876 Jun 18 02:16	8° $\mathfrak{H}$ 05'14	
direct	1870 Aug 26 18:07	21° $\mathfrak{A}$ 55'10		opposition	1876 Aug 27 17:00	4° $\mathfrak{H}$ 42'11	-1°-51'-46
evening set	1870 Dec 06 06:51	28° $\mathfrak{A}$ 58'42		min. Earth dist.	1876 Aug 27 18:37	4° $\mathfrak{H}$ 41'53	8.74128 AU
	1870 Dec 15 01:02	0° $\mathfrak{Z}$		direct	1876 Nov 04 11:51	1° $\mathfrak{H}$ 22'43	
conjunction	1870 Dec 22 22:07	0° $\mathfrak{Z}$ 55'47	0°50'15	evening set	1877 Feb 12 06:30	8° $\mathfrak{H}$ 37'11	
minimum elong	1870 Dec 22 22:08	0° $\mathfrak{Z}$ 55'48	0°50'15				
max. Earth dist.	1870 Dec 22 17:50	0° $\mathfrak{Z}$ 54'32	11.03494 AU	conjunction	1877 Mar 01 02:41	10° $\mathfrak{H}$ 39'56	-1°-40'-52
morning rise	1871 Jan 08 12:43	2° $\mathfrak{Z}$ 52'44		minimum elong	1877 Mar 01 02:39	10° $\mathfrak{H}$ 39'55	1°40'53
retrograde	1871 Apr 19 05:31	9° $\mathfrak{Z}$ 53'46		max. Earth dist.	1877 Mar 01 00:22	10° $\mathfrak{H}$ 39'13	10.69130 AU
opposition	1871 Jun 28 19:34	6° $\mathfrak{Z}$ 53'28	0°45'50	morning rise	1877 Mar 18 02:41	12° $\mathfrak{H}$ 43'53	
min. Earth dist.	1871 Jun 28 22:46	6° $\mathfrak{Z}$ 34'52	9.03259 AU	retrograde	1877 Jul 01 05:27	20° $\mathfrak{H}$ 21'07	
direct	1871 Sep 07 16:27	3° $\mathfrak{Z}$ 16'17		opposition	1877 Sep 09 13:52	16° $\mathfrak{H}$ 56'48	-2°-15'-32
evening set	1871 Dec 17 15:22	10° $\mathfrak{Z}$ 18'00		min. Earth dist.	1877 Sep 09 15:01	16° $\mathfrak{H}$ 56'34	8.64044 AU
				direct	1877 Nov 16 20:47	13° $\mathfrak{H}$ 36'39	
conjunction	1872 Jan 03 06:35	12° $\mathfrak{Z}$ 15'13	0°24'25	evening set	1878 Feb 24 19:05	20° $\mathfrak{H}$ 57'33	
minimum elong	1872 Jan 03 06:36	12° $\mathfrak{Z}$ 15'13	0°24'24				
max. Earth dist.	1872 Jan 03 02:45	12° $\mathfrak{Z}$ 14'05	11.02455 AU	conjunction	1878 Mar 13 17:37	23° $\mathfrak{H}$ 02'20	-1°-57'-45
morning rise	1872 Jan 19 21:48	14° $\mathfrak{Z}$ 12'30		minimum elong	1878 Mar 13 17:35	23° $\mathfrak{H}$ 02'19	1°57'46
retrograde	1872 Apr 30 06:08	21° $\mathfrak{Z}$ 16'19		max. Earth dist.	1878 Mar 13 15:22	23° $\mathfrak{H}$ 01'38	10.58681 AU
opposition	1872 Jul 09 23:30	17° $\mathfrak{Z}$ 57'24	0°13'26	morning rise	1878 Mar 30 20:36	25° $\mathfrak{H}$ 08'28	
min. Earth dist.	1872 Jul 10 02:44	17° $\mathfrak{Z}$ 56'49	9.01144 AU		1878 May 14 20:15	0° $\mathfrak{Y}$	
direct	1872 Sep 18 13:35	14° $\mathfrak{Z}$ 38'35		retrograde	1878 Jul 14 15:56	2° $\mathfrak{Y}$ 54'37	
desc. node	1872 Dec 10 00:07	19° $\mathfrak{Z}$ 38'43			1878 Sep 15 23:55	30° $\mathbb{R}$ $\mathfrak{H}$	
evening set	1872 Dec 28 00:51	21° $\mathfrak{Z}$ 39'56		opposition	1878 Sep 22 15:49	29° $\mathfrak{H}$ 29'03	-2°-33'-32
				min. Earth dist.	1878 Sep 22 16:56	29° $\mathfrak{H}$ 28'50	8.53406 AU
conjunction	1873 Jan 13 16:13	23° $\mathfrak{Z}$ 37'37	0°-2'-33	direct	1878 Nov 29 10:42	26° $\mathfrak{H}$ 08'03	
minimum elong	1873 Jan 13 16:13	23° $\mathfrak{Z}$ 37'37	0°02'34		1879 Feb 06 00:53	0° $\mathfrak{Y}$	
behind sun begin	1873 Jan 13 09:15	23° $\mathfrak{Z}$ 35'34		evening set	1879 Mar 09 16:28	3° $\mathfrak{Y}$ 36'15	
behind sun end	1873 Jan 13 23:11	23° $\mathfrak{Z}$ 39'40					
max. Earth dist.	1873 Jan 13 11:48	23° $\mathfrak{Z}$ 36'21	10.99322 AU	conjunction	1879 Mar 26 18:06	5° $\mathfrak{Y}$ 43'19	-2°-9'-20
morning rise	1873 Jan 30 08:36	25° $\mathfrak{Z}$ 35'37		minimum elong	1879 Mar 26 18:05	5° $\mathfrak{Y}$ 43'18	2°09'22
	1873 Mar 13 20:00	0° $\approx$		max. Earth dist.	1879 Mar 26 16:59	5° $\mathfrak{Y}$ 42'58	10.47912 AU
retrograde	1873 May 12 08:40	2° $\approx$ 43'41		morning rise	1879 Apr 13 00:26	7° $\mathfrak{Y}$ 51'50	
	1873 Jul 14 01:55	30° $\mathbb{R}$ $\mathfrak{Z}$		retrograde	1879 Jul 28 08:44	15° $\mathfrak{Y}$ 46'44	
opposition	1873 Jul 22 05:13	29° $\mathfrak{Z}$ 23'58	0°-19'-44	opposition	1879 Oct 05 23:16	12° $\mathfrak{Y}$ 19'59	-2°-44'-25
				min. Earth dist.	1879 Oct 05 23:38	12° $\mathfrak{Y}$ 19'55	8.42687 AU



direct	1879 Dec 12 07:42	8° $\Upsilon$ 57'57		conjunction	1886 Jul 04 02:21	11° $\text{♄}$ 59'15	0°-24'-57
evening set	1880 Mar 21 23:08	16° $\Upsilon$ 33'57		minimum elong	1886 Jul 04 02:22	11° $\text{♄}$ 59'15	0°24'58
				max. Earth dist.	1886 Jul 04 06:37	12° $\text{♄}$ 00'38	10.04902 AU
conjunction	1880 Apr 08 04:37	18° $\Upsilon$ 43'31	-2°-14'-39	morning rise	1886 Jul 22 06:42	14° $\text{♄}$ 20'00	
minimum elong	1880 Apr 08 04:37	18° $\Upsilon$ 43'31	2°14'40	retrograde	1886 Nov 03 20:37	22° $\text{♄}$ 31'36	
max. Earth dist.	1880 Apr 08 05:02	18° $\Upsilon$ 43'38	10.37310 AU	opposition	1887 Jan 09 14:03	19° $\text{♄}$ 03'23	0°-10'-39
morning rise	1880 Apr 25 14:43	20° $\Upsilon$ 54'34		min. Earth dist.	1887 Jan 09 10:11	19° $\text{♄}$ 04'11	8.06209 AU
retrograde	1880 Aug 10 07:42	28° $\Upsilon$ 57'30		direct	1887 Mar 17 16:39	15° $\text{♄}$ 34'10	
opposition	1880 Oct 18 11:57	25° $\Upsilon$ 29'40	-2°-47'-3	asc. node	1887 Apr 17 19:09	16° $\text{♄}$ 26'47	
min. Earth dist.	1880 Oct 18 11:17	25° $\Upsilon$ 29'48	8.32361 AU	evening set	1887 Jun 30 23:24	23° $\text{♄}$ 46'47	
direct	1880 Dec 24 12:22	22° $\Upsilon$ 06'30					
evening set	1881 Apr 04 15:36	29° $\Upsilon$ 50'27		conjunction	1887 Jul 19 03:46	26° $\text{♄}$ 06'59	0°08'04
	1881 Apr 05 22:10	0° $\text{♄}$		minimum elong	1887 Jul 19 03:45	26° $\text{♄}$ 06'59	0°08'04
				behind sun begin	1887 Jul 18 21:14	26° $\text{♄}$ 04'53	
conjunction	1881 Apr 22 01:29	2° $\text{♄}$ 02'40	-2°-12'-58	behind sun end	1887 Jul 19 10:16	26° $\text{♄}$ 09'04	
minimum elong	1881 Apr 22 01:30	2° $\text{♄}$ 02'40	2°12'59	max. Earth dist.	1887 Jul 19 08:48	26° $\text{♄}$ 08'35	10.08186 AU
max. Earth dist.	1881 Apr 22 02:59	2° $\text{♄}$ 03'08	10.27344 AU	morning rise	1887 Aug 06 06:43	28° $\text{♄}$ 26'44	
morning rise	1881 May 09 15:43	4° $\text{♄}$ 16'18			1887 Aug 18 19:05	0° $\text{♄}$	
retrograde	1881 Aug 24 13:41	12° $\text{♄}$ 26'01		retrograde	1887 Nov 17 23:59	6° $\text{♄}$ 32'08	
opposition	1881 Nov 01 05:21	8° $\text{♄}$ 57'21	-2°-40'-40	opposition	1888 Jan 23 14:23	3° $\text{♄}$ 04'52	0°30'11
min. Earth dist.	1881 Nov 01 03:48	8° $\text{♄}$ 57'40	8.22891 AU	min. Earth dist.	1888 Jan 23 10:05	3° $\text{♄}$ 05'44	8.10771 AU
direct	1882 Jan 06 22:07	5° $\text{♄}$ 32'58			1888 Mar 09 20:01	30° $\text{♄}$	
evening set	1882 Apr 18 17:29	13° $\text{♄}$ 24'47		direct	1888 Mar 31 03:16	29° $\text{♄}$ 35'22	
	1882 May 01 04:41	15° $\text{♄}$			1888 Apr 21 10:01	0° $\text{♄}$	
				evening set	1888 Jul 14 21:50	7° $\text{♄}$ 46'28	
conjunction	1882 May 06 08:03	15° $\text{♄}$ 39'37	-2°-3'-54				
minimum elong	1882 May 06 08:05	15° $\text{♄}$ 39'38	2°03'55	conjunction	1888 Aug 02 00:29	10° $\text{♄}$ 05'14	0°40'13
max. Earth dist.	1882 May 06 09:54	15° $\text{♄}$ 40'13	10.18511 AU	minimum elong	1888 Aug 02 00:27	10° $\text{♄}$ 05'13	0°40'13
morning rise	1882 May 24 02:36	17° $\text{♄}$ 55'46		max. Earth dist.	1888 Aug 02 05:42	10° $\text{♄}$ 06'55	10.13958 AU
retrograde	1882 Sep 08 00:28	26° $\text{♄}$ 10'35		morning rise	1888 Aug 20 00:26	12° $\text{♄}$ 23'10	
opposition	1882 Nov 15 03:12	22° $\text{♄}$ 41'23	-2°-25'-3		1888 Sep 10 14:54	15° $\text{♄}$	
min. Earth dist.	1882 Nov 15 01:11	22° $\text{♄}$ 41'48	8.14824 AU	retrograde	1888 Nov 30 20:37	20° $\text{♄}$ 21'02	
direct	1883 Jan 20 14:35	19° $\text{♄}$ 15'48		opposition	1889 Feb 05 11:19	16° $\text{♄}$ 54'55	1°08'41
evening set	1883 May 03 03:50	27° $\text{♄}$ 14'50		min. Earth dist.	1889 Feb 05 07:14	16° $\text{♄}$ 55'45	8.17658 AU
					1889 Mar 02 08:48	15° $\text{♄}$	
conjunction	1883 May 20 23:02	29° $\text{♄}$ 32'04	-1°-47'-34	direct	1889 Apr 14 12:12	13° $\text{♄}$ 25'28	
minimum elong	1883 May 20 23:05	29° $\text{♄}$ 32'05	1°47'35		1889 May 27 06:15	15° $\text{♄}$	
max. Earth dist.	1883 May 21 01:18	29° $\text{♄}$ 32'48	10.11405 AU	evening set	1889 Jul 29 14:39	21° $\text{♄}$ 33'10	
	1883 May 24 13:24	0° $\text{♄}$					
morning rise	1883 Jun 07 21:41	1° $\text{♄}$ 50'26		conjunction	1889 Aug 16 13:59	23° $\text{♄}$ 49'46	1°09'38
retrograde	1883 Sep 22 13:32	10° $\text{♄}$ 08'09		minimum elong	1889 Aug 16 13:56	23° $\text{♄}$ 49'45	1°09'38
opposition	1883 Nov 29 04:27	6° $\text{♄}$ 38'43	-2°00'-39	max. Earth dist.	1889 Aug 16 18:48	23° $\text{♄}$ 51'18	10.21825 AU
min. Earth dist.	1883 Nov 29 02:09	6° $\text{♄}$ 39'11	8.08761 AU	morning rise	1889 Sep 03 09:42	26° $\text{♄}$ 05'15	
direct	1884 Feb 03 14:49	3° $\text{♄}$ 11'58			1889 Oct 07 03:33	0° $\text{♄}$	
evening set	1884 May 16 21:34	11° $\text{♄}$ 17'04		retrograde	1889 Dec 14 10:19	3° $\text{♄}$ 54'51	
				opposition	1890 Feb 19 03:53	0° $\text{♄}$ 30'00	1°42'33
conjunction	1884 Jun 03 20:58	13° $\text{♄}$ 36'14	-1°-24'-41	min. Earth dist.	1890 Feb 19 00:38	0° $\text{♄}$ 30'39	8.26425 AU
minimum elong	1884 Jun 03 21:01	13° $\text{♄}$ 36'15	1°24'42		1890 Feb 25 08:41	30° $\text{♄}$	
max. Earth dist.	1884 Jun 03 23:46	13° $\text{♄}$ 37'09	10.06565 AU	direct	1890 Apr 28 17:09	27° $\text{♄}$ 00'53	
morning rise	1884 Jun 21 22:57	15° $\text{♄}$ 56'13			1890 Jun 28 04:53	0° $\text{♄}$	
retrograde	1884 Oct 06 01:48	24° $\text{♄}$ 14'18		evening set	1890 Aug 12 23:38	5° $\text{♄}$ 03'35	
opposition	1884 Dec 12 07:34	20° $\text{♄}$ 44'58	-1°-28'-43				
min. Earth dist.	1884 Dec 12 05:01	20° $\text{♄}$ 45'30	8.05165 AU	conjunction	1890 Aug 30 18:39	7° $\text{♄}$ 17'32	1°34'40
direct	1885 Feb 16 20:42	17° $\text{♄}$ 17'10		minimum elong	1890 Aug 30 18:35	7° $\text{♄}$ 17'31	1°34'41
evening set	1885 May 31 20:32	25° $\text{♄}$ 26'44		max. Earth dist.	1890 Aug 30 22:19	7° $\text{♄}$ 18'42	10.31309 AU
				morning rise	1890 Sep 17 09:28	9° $\text{♄}$ 30'11	
conjunction	1885 Jun 18 23:08	27° $\text{♄}$ 47'09	0°-56'-33	retrograde	1890 Dec 27 16:31	17° $\text{♄}$ 11'14	
minimum elong	1885 Jun 18 23:11	27° $\text{♄}$ 47'10	0°56'34	opposition	1891 Mar 04 15:24	13° $\text{♄}$ 47'41	2°10'05
max. Earth dist.	1885 Jun 19 02:32	27° $\text{♄}$ 48'15	10.04348 AU	min. Earth dist.	1891 Mar 04 13:06	13° $\text{♄}$ 48'09	8.36554 AU
	1885 Jul 06 02:09	0° $\text{♄}$		direct	1891 May 12 17:21	10° $\text{♄}$ 19'14	
morning rise	1885 Jul 07 03:09	0° $\text{♄}$ 07'58		evening set	1891 Aug 26 23:15	18° $\text{♄}$ 15'37	
retrograde	1885 Oct 20 12:39	8° $\text{♄}$ 23'55					
opposition	1885 Dec 26 11:18	4° $\text{♄}$ 55'01	0°-51'-12	conjunction	1891 Sep 13 13:26	20° $\text{♄}$ 26'43	1°54'12
min. Earth dist.	1885 Dec 26 08:17	4° $\text{♄}$ 55'38	8.04295 AU	minimum elong	1891 Sep 13 13:23	20° $\text{♄}$ 26'42	1°54'12
direct	1886 Mar 03 05:53	1° $\text{♄}$ 26'22		max. Earth dist.	1891 Sep 13 15:35	20° $\text{♄}$ 27'23	10.41866 AU
evening set	1886 Jun 15 22:02	9° $\text{♄}$ 38'29		morning rise	1891 Sep 30 23:12	22° $\text{♄}$ 36'25	
					1891 Dec 27 17:42	0° $\text{♄}$	



retrograde	1892 Jan 09 14:21	0°♄09'03		max. Earth dist.	1897 Nov 25 04:13	3°♄17'58	10.98285 AU
	1892 Jan 22 12:49	30°♄		morning rise	1897 Dec 11 21:34	5°♄16'16	
opposition	1892 Mar 16 21:34	26°♄46'49	2°30'12	retrograde	1898 Mar 21 15:14	12°♄16'35	
min. Earth dist.	1892 Mar 16 19:44	26°♄47'11	8.47465 AU	opposition	1898 May 30 10:30	8°♄59'20	1°55'06
direct	1892 May 25 12:41	23°♄19'16		min. Earth dist.	1898 May 30 12:18	8°♄59'00	9.00831 AU
	1892 Aug 29 23:07	0°♄		direct	1898 Aug 09 14:56	5°♄39'02	
evening set	1892 Sep 08 12:51	1°♄08'31		evening set	1898 Nov 20 03:04	12°♄47'19	
conjunction	1892 Sep 25 22:13	3°♄16'44	2°07'33	conjunction	1898 Dec 06 19:16	14°♄44'45	1°23'54
minimum elong	1892 Sep 25 22:11	3°♄16'43	2°07'33	minimum elong	1898 Dec 06 19:18	14°♄44'46	1°23'54
max. Earth dist.	1892 Sep 25 23:29	3°♄17'07	10.52923 AU	max. Earth dist.	1898 Dec 06 16:42	14°♄44'00	11.02704 AU
morning rise	1892 Oct 13 03:01	5°♄23'33		morning rise	1898 Dec 23 09:26	16°♄41'41	
retrograde	1893 Jan 21 05:42	12°♄48'18		retrograde	1899 Apr 02 12:15	23°♄40'59	
opposition	1893 Mar 29 22:25	9°♄27'19	2°42'24	opposition	1899 Jun 11 14:18	20°♄23'46	1°29'07
min. Earth dist.	1893 Mar 29 20:46	9°♄27'38	8.58591 AU	min. Earth dist.	1899 Jun 11 16:52	20°♄23'18	9.04179 AU
direct	1893 Jun 08 01:42	6°♄00'54		direct	1899 Aug 21 16:55	17°♄04'20	
evening set	1893 Sep 21 16:09	13°♄42'29		evening set	1899 Dec 01 13:34	24°♄08'45	
conjunction	1893 Oct 08 21:06	15°♄48'01	2°14'28	conjunction	1899 Dec 18 04:55	26°♄05'45	1°01'13
minimum elong	1893 Oct 08 21:05	15°♄48'01	2°14'28	minimum elong	1899 Dec 18 04:57	26°♄05'46	1°01'13
max. Earth dist.	1893 Oct 08 22:04	15°♄48'19	10.63939 AU	max. Earth dist.	1899 Dec 18 01:14	26°♄04'40	11.05001 AU
morning rise	1893 Oct 25 21:24	17°♄52'10		morning rise	1900 Jan 03 19:11	28°♄02'29	
retrograde	1894 Feb 02 16:55	25°♄09'50			1900 Jan 21 08:09	0°♄	
opposition	1894 Apr 11 18:17	21°♄49'58	2°46'41	retrograde	1900 Apr 14 06:59	5°♄02'15	
min. Earth dist.	1894 Apr 11 17:07	21°♄50'12	8.69403 AU	opposition	1900 Jun 23 17:36	1°♄44'47	0°59'47
direct	1894 Jun 21 05:53	18°♄24'51		min. Earth dist.	1900 Jun 23 21:21	1°♄44'06	9.05342 AU
evening set	1894 Oct 04 09:32	25°♄58'39			1900 Jul 18 17:34	30°♄	
conjunction	1894 Oct 21 10:36	28°♄01'48	2°15'03	direct	1900 Sep 02 15:16	28°♄25'59	
minimum elong	1894 Oct 21 10:37	28°♄01'48	2°15'03		1900 Oct 17 05:01	0°♄	
max. Earth dist.	1894 Oct 21 11:11	28°♄01'59	10.74401 AU	evening set	1900 Dec 12 22:16	5°♄27'53	
	1894 Nov 06 18:50	0°♄		conjunction	1900 Dec 29 13:14	7°♄24'48	0°36'11
morning rise	1894 Nov 07 07:13	0°♄03'40		minimum elong	1900 Dec 29 13:15	7°♄24'49	0°36'11
retrograde	1895 Feb 14 21:43	7°♄15'10		max. Earth dist.	1900 Dec 29 08:16	7°♄23'20	11.05057 AU
opposition	1895 Apr 24 09:37	3°♄56'18	2°43'24	morning rise	1901 Jan 15 04:09	9°♄21'43	
min. Earth dist.	1895 Apr 24 09:49	3°♄56'16	8.79416 AU	retrograde	1901 Apr 26 04:34	16°♄23'32	
direct	1895 Jul 04 03:44	0°♄32'29		opposition	1901 Jul 05 21:05	13°♄05'32	0°28'08
evening set	1895 Oct 16 18:14	7°♄58'51		min. Earth dist.	1901 Jul 06 01:23	13°♄04'44	9.04222 AU
conjunction	1895 Nov 02 15:57	9°♄59'57	2°09'41	direct	1901 Sep 14 14:09	9°♄47'07	
minimum elong	1895 Nov 02 15:58	9°♄59'57	2°09'40	evening set	1901 Dec 24 07:02	16°♄47'59	
max. Earth dist.	1895 Nov 02 14:58	9°♄59'39	10.83852 AU	conjunction	1902 Jan 09 22:13	18°♄45'13	0°09'43
morning rise	1895 Nov 19 09:48	11°♄59'57		minimum elong	1902 Jan 09 22:13	18°♄45'14	0°09'43
	1895 Dec 16 10:27	15°♄		behind sun begin	1902 Jan 09 16:27	18°♄43'32	
retrograde	1896 Feb 26 21:56	19°♄06'24		behind sun end	1902 Jan 10 03:59	18°♄46'55	
opposition	1896 May 05 20:52	15°♄48'21	2°33'10	max. Earth dist.	1902 Jan 09 17:15	18°♄43'46	11.02794 AU
min. Earth dist.	1896 May 05 22:20	15°♄48'04	8.88208 AU	morning rise	1902 Jan 26 14:01	20°♄42'41	
	1896 May 16 16:03	15°♄		retrograde	1902 May 08 06:18	27°♄48'07	
direct	1896 Jul 15 21:09	12°♄25'47		desc. node	1902 May 24 18:36	27°♄34'59	
	1896 Sep 11 17:17	15°♄		opposition	1902 Jul 18 01:33	24°♄29'20	0°-4'-45
evening set	1896 Oct 27 19:08	19°♄45'16		min. Earth dist.	1902 Jul 18 05:39	24°♄28'34	9.00794 AU
conjunction	1896 Nov 13 14:14	21°♄44'44	1°58'55	direct	1902 Sep 26 10:54	21°♄11'06	
minimum elong	1896 Nov 13 14:16	21°♄44'45	1°58'54	evening set	1903 Jan 04 17:36	28°♄12'30	
max. Earth dist.	1896 Nov 13 11:52	21°♄44'02	10.91917 AU		1903 Jan 19 22:14	0°♄	
morning rise	1896 Nov 30 06:14	23°♄43'17		conjunction	1903 Jan 21 09:20	0°♄10'26	0°-17'-23
	1897 Feb 07 14:32	0°♄		minimum elong	1903 Jan 21 09:19	0°♄10'25	0°17'24
retrograde	1897 Mar 09 19:19	0°♄45'59		max. Earth dist.	1903 Jan 21 04:29	0°♄09'00	10.98259 AU
	1897 Apr 09 14:28	30°♄		morning rise	1903 Feb 07 02:17	2°♄08'48	
opposition	1897 May 18 04:58	27°♄28'28	2°16'46	retrograde	1903 May 20 12:08	9°♄19'22	
min. Earth dist.	1897 May 18 06:49	27°♄28'08	8.95439 AU	opposition	1903 Jul 30 08:27	5°♄59'35	0°-37'-49
direct	1897 Jul 28 08:15	24°♄07'07		min. Earth dist.	1903 Jul 30 12:21	5°♄58'51	8.95194 AU
	1897 Oct 27 18:33	0°♄		direct	1903 Oct 08 08:06	2°♄41'17	
evening set	1897 Nov 08 13:27	1°♄20'28		evening set	1904 Jan 16 07:32	9°♄44'44	
conjunction	1897 Nov 25 06:47	3°♄18'44	1°43'24	conjunction	1904 Feb 01 23:57	11°♄43'40	0°-43'-59
minimum elong	1897 Nov 25 06:50	3°♄18'44	1°43'24	minimum elong	1904 Feb 01 23:55	11°♄43'40	0°44'00



max. Earth dist.	1904 Feb 01 18:34	11° $\approx$ 42'04	10.91671 AU	max. Earth dist.	1910 Apr 17 02:42	26° $\Upsilon$ 14'26	10.29773 AU
morning rise	1904 Feb 18 18:33	13° $\approx$ 43'17		morning rise	1910 May 04 15:58	28° $\Upsilon$ 27'24	
	1904 Feb 29 21:35	15° $\approx$			1910 May 17 07:29	0° $\mathcal{B}$	
retrograde	1904 May 31 23:27	21° $\approx$ 00'21		retrograde	1910 Aug 19 12:50	6° $\mathcal{B}$ 35'01	
opposition	1904 Aug 10 18:38	17° $\approx$ 39'21	-1°-9'-49	opposition	1910 Oct 27 09:48	3° $\mathcal{B}$ 06'05	-2°-44'-50
min. Earth dist.	1904 Aug 10 22:51	17° $\approx$ 38'34	8.87700 AU	min. Earth dist.	1910 Oct 27 09:37	3° $\mathcal{B}$ 06'07	8.24967 AU
	1904 Sep 20 23:16	15° $\mathcal{R}\approx$			1910 Dec 14 23:13	30° $\mathcal{R}\Upsilon$	
direct	1904 Oct 19 06:57	14° $\approx$ 20'42		direct	1911 Jan 02 05:19	29° $\Upsilon$ 41'35	
	1904 Nov 16 03:49	15° $\approx$			1911 Jan 20 09:18	0° $\mathcal{B}$	
evening set	1905 Jan 27 02:24	21° $\approx$ 27'40		evening set	1911 Apr 13 17:30	7° $\mathcal{B}$ 30'44	
conjunction	1905 Feb 12 19:56	23° $\approx$ 27'55	-1°-9'-9	conjunction	1911 May 01 05:53	9° $\mathcal{B}$ 44'38	-2°-8'-57
minimum elong	1905 Feb 12 19:54	23° $\approx$ 27'55	1°09'10	minimum elong	1911 May 01 05:54	9° $\mathcal{B}$ 44'39	2°08'58
max. Earth dist.	1905 Feb 12 14:19	23° $\approx$ 26'14	10.83340 AU	max. Earth dist.	1911 May 01 06:42	9° $\mathcal{B}$ 44'54	10.20238 AU
morning rise	1905 Mar 01 16:34	25° $\approx$ 29'07		morning rise	1911 May 18 22:41	11° $\mathcal{B}$ 59'58	
	1905 Apr 13 08:38	0° $\mathcal{H}$			1911 Jun 12 23:23	15° $\mathcal{B}$	
retrograde	1905 Jun 13 15:10	2° $\mathcal{H}$ 53'46		retrograde	1911 Sep 02 20:57	20° $\mathcal{B}$ 13'37	
	1905 Aug 17 00:43	30° $\mathcal{R}\approx$		opposition	1911 Nov 10 06:11	16° $\mathcal{B}$ 43'58	-2°-33'-22
opposition	1905 Aug 23 08:37	29° $\approx$ 31'24	-1°-39'-28	min. Earth dist.	1911 Nov 10 04:55	16° $\mathcal{B}$ 44'13	8.16199 AU
min. Earth dist.	1905 Aug 23 12:49	29° $\approx$ 30'36	8.78646 AU		1911 Dec 02 14:32	15° $\mathcal{R}\mathcal{B}$	
direct	1905 Oct 31 09:03	26° $\approx$ 12'08		direct	1912 Jan 15 20:23	13° $\mathcal{B}$ 18'16	
	1906 Jan 08 12:46	0° $\mathcal{H}$			1912 Feb 28 03:41	15° $\mathcal{B}$	
evening set	1906 Feb 08 03:25	3° $\mathcal{H}$ 23'59		evening set	1912 Apr 27 00:18	21° $\mathcal{B}$ 15'00	
conjunction	1906 Feb 24 22:41	5° $\mathcal{H}$ 25'54	-1°-31'-46	conjunction	1912 May 14 17:34	23° $\mathcal{B}$ 31'26	-1°-55'-50
minimum elong	1906 Feb 24 22:39	5° $\mathcal{H}$ 25'53	1°31'47	minimum elong	1912 May 14 17:37	23° $\mathcal{B}$ 31'27	1°55'51
max. Earth dist.	1906 Feb 24 18:08	5° $\mathcal{H}$ 24'31	10.73615 AU	max. Earth dist.	1912 May 14 20:21	23° $\mathcal{B}$ 32'20	10.12385 AU
morning rise	1906 Mar 13 21:35	7° $\mathcal{H}$ 28'55		morning rise	1912 Jun 01 14:34	25° $\mathcal{B}$ 49'07	
retrograde	1906 Jun 26 14:36	15° $\mathcal{H}$ 02'06			1912 Jul 07 06:11	0° $\mathcal{H}$	
opposition	1906 Sep 05 03:06	11° $\mathcal{H}$ 38'14	-2°-5'-25	retrograde	1912 Sep 16 08:36	4° $\mathcal{H}$ 06'42	
min. Earth dist.	1906 Sep 05 06:22	11° $\mathcal{H}$ 37'37	8.68400 AU	opposition	1912 Nov 23 06:19	0° $\mathcal{H}$ 36'42	-2°-12'-46
direct	1906 Nov 12 17:09	8° $\mathcal{H}$ 18'11		min. Earth dist.	1912 Nov 23 03:37	0° $\mathcal{H}$ 37'15	8.09348 AU
evening set	1907 Feb 20 11:56	15° $\mathcal{H}$ 36'07			1912 Nov 30 18:20	30° $\mathcal{R}\mathcal{B}$	
conjunction	1907 Mar 09 09:26	17° $\mathcal{H}$ 39'59	-1°-50'-42	direct	1913 Jan 28 18:13	27° $\mathcal{B}$ 09'53	
minimum elong	1907 Mar 09 09:24	17° $\mathcal{H}$ 39'58	1°50'43	evening set	1913 Mar 26 13:05	0° $\mathcal{H}$	
max. Earth dist.	1907 Mar 09 06:29	17° $\mathcal{H}$ 39'04	10.62894 AU		1913 May 11 15:16	5° $\mathcal{H}$ 13'11	
morning rise	1907 Mar 26 10:52	19° $\mathcal{H}$ 45'07		conjunction	1913 May 29 13:06	7° $\mathcal{H}$ 31'49	-1°-35'-45
retrograde	1907 Jul 09 22:15	27° $\mathcal{H}$ 27'21		minimum elong	1913 May 29 13:09	7° $\mathcal{H}$ 31'50	1°35'46
opposition	1907 Sep 18 02:39	24° $\mathcal{H}$ 02'00	-2°-26'-13	max. Earth dist.	1913 May 29 17:19	7° $\mathcal{H}$ 33'11	10.06694 AU
min. Earth dist.	1907 Sep 18 04:27	24° $\mathcal{H}$ 01'39	8.57395 AU	morning rise	1913 Jun 16 13:41	9° $\mathcal{H}$ 51'22	
direct	1907 Nov 25 04:06	20° $\mathcal{H}$ 41'01		retrograde	1913 Sep 30 21:49	18° $\mathcal{H}$ 10'25	
evening set	1908 Mar 04 05:06	28° $\mathcal{H}$ 06'02		opposition	1913 Dec 07 08:59	14° $\mathcal{H}$ 40'28	-1°-43'-57
	1908 Mar 19 14:22	0° $\mathcal{Y}$		min. Earth dist.	1913 Dec 07 05:12	14° $\mathcal{H}$ 41'15	8.04855 AU
conjunction	1908 Mar 21 05:20	0° $\mathcal{Y}$ 12'07	-2°-4'-50	direct	1914 Feb 11 20:52	11° $\mathcal{H}$ 12'41	
minimum elong	1908 Mar 21 05:19	0° $\mathcal{Y}$ 12'07	2°04'51	evening set	1914 May 26 12:29	19° $\mathcal{H}$ 21'09	
max. Earth dist.	1908 Mar 21 03:14	0° $\mathcal{Y}$ 11'28	10.51661 AU	conjunction	1914 Jun 13 13:59	21° $\mathcal{H}$ 41'20	-1°-9'-44
morning rise	1908 Apr 07 09:57	2° $\mathcal{Y}$ 19'38		minimum elong	1914 Jun 13 14:02	21° $\mathcal{H}$ 41'21	1°09'45
retrograde	1908 Jul 22 12:46	10° $\mathcal{Y}$ 10'59		max. Earth dist.	1914 Jun 13 19:14	21° $\mathcal{H}$ 43'03	10.03549 AU
opposition	1908 Sep 30 07:40	6° $\mathcal{Y}$ 44'14	-2°-40'-32	morning rise	1914 Jul 01 17:10	24° $\mathcal{H}$ 02'05	
min. Earth dist.	1908 Sep 30 08:31	6° $\mathcal{Y}$ 44'04	8.46131 AU		1914 Aug 24 17:26	0° $\mathcal{B}$	
direct	1908 Dec 06 21:04	3° $\mathcal{Y}$ 22'10		retrograde	1914 Oct 15 11:41	2° $\mathcal{B}$ 20'05	
evening set	1909 Mar 17 07:32	10° $\mathcal{Y}$ 55'00			1914 Dec 07 06:50	30° $\mathcal{R}\mathcal{H}$	
conjunction	1909 Apr 03 11:10	13° $\mathcal{Y}$ 03'35	-2°-13'-7	opposition	1914 Dec 21 13:07	28° $\mathcal{H}$ 50'34	-1°-8'-35
minimum elong	1909 Apr 03 11:09	13° $\mathcal{Y}$ 03'34	2°13'08	min. Earth dist.	1914 Dec 21 08:39	28° $\mathcal{H}$ 51'29	8.03042 AU
max. Earth dist.	1909 Apr 03 09:35	13° $\mathcal{Y}$ 03'05	10.40440 AU	direct	1915 Feb 26 03:25	25° $\mathcal{H}$ 22'01	
morning rise	1909 Apr 20 19:33	15° $\mathcal{Y}$ 13'39			1915 May 11 21:22	0° $\mathcal{B}$	
retrograde	1909 Aug 05 09:32	23° $\mathcal{Y}$ 13'39		evening set	1915 Jun 10 13:29	3° $\mathcal{B}$ 33'52	
opposition	1909 Oct 13 18:10	19° $\mathcal{Y}$ 45'41	-2°-47'-3	conjunction	1915 Jun 28 17:21	5° $\mathcal{B}$ 54'48	0°-39'-23
min. Earth dist.	1909 Oct 13 18:33	19° $\mathcal{Y}$ 45'37	8.35135 AU	minimum elong	1915 Jun 28 17:23	5° $\mathcal{B}$ 54'48	0°39'24
direct	1909 Dec 19 21:51	16° $\mathcal{Y}$ 22'25		max. Earth dist.	1915 Jun 28 23:08	5° $\mathcal{B}$ 56'40	10.03178 AU
evening set	1910 Mar 30 19:45	24° $\mathcal{Y}$ 03'27		morning rise	1915 Jul 16 21:44	8° $\mathcal{B}$ 15'53	
conjunction	1910 Apr 17 03:28	26° $\mathcal{Y}$ 14'41	-2°-14'-40	retrograde	1915 Oct 29 22:58	16° $\mathcal{B}$ 30'28	
minimum elong	1910 Apr 17 03:28	26° $\mathcal{Y}$ 14'41	2°14'41	opposition	1916 Jan 04 17:04	13° $\mathcal{B}$ 01'43	0°-28'-58
				min. Earth dist.	1916 Jan 04 12:37	13° $\mathcal{B}$ 02'38	8.04053 AU



direct	1916 Mar 11 13:51	9° $\overline{53}$ 32'38		opposition	1922 Mar 25 16:47	4° $\underline{15}$ '17	2°37'54
evening set	1916 Jun 24 16:01	17° $\overline{54}$ 5'56		min. Earth dist.	1922 Mar 25 15:37	4° $\underline{15}$ '31	8.54425 AU
				direct	1922 Jun 03 13:07	0° $\underline{48}$ '48	
conjunction	1916 Jul 12 20:34	20° $\overline{50}$ 6'40	0°-6'-45	evening set	1922 Sep 17 10:08	8° $\underline{43}$ '51	
minimum elong	1916 Jul 12 20:34	20° $\overline{50}$ 6'41	0°06'45				
behind sun begin	1916 Jul 12 13:43	20° $\overline{50}$ 4'28		conjunction	1922 Oct 04 16:56	10° $\underline{40}$ '31	2°12'07
behind sun end	1916 Jul 13 03:25	20° $\overline{50}$ 8'53		minimum elong	1922 Oct 04 16:55	10° $\underline{40}$ '31	2°12'07
max. Earth dist.	1916 Jul 13 02:10	20° $\overline{50}$ 8'28	10.05616 AU	max. Earth dist.	1922 Oct 04 17:23	10° $\underline{40}$ '39	10.59740 AU
morning rise	1916 Jul 31 00:27	22° $\overline{52}$ 7'10		morning rise	1922 Oct 21 19:08	12° $\underline{45}$ '48	
asc. node	1916 Sep 27 18:34	28° $\overline{54}$ 5'40		retrograde	1923 Jan 29 18:45	20° $\underline{46}$ '36	
	1916 Oct 17 15:33	0° $\Omega$		opposition	1923 Apr 07 15:09	16° $\underline{46}$ '41	2°45'35
retrograde	1916 Nov 12 05:10	0° $\Omega$ 36'13		min. Earth dist.	1923 Apr 07 15:28	16° $\underline{46}$ '37	8.65175 AU
	1916 Dec 07 19:24	30° $\overline{R}$ $\overline{5}$		direct	1923 Jun 16 21:42	13° $\underline{42}$ '19	
opposition	1917 Jan 17 19:15	27° $\overline{50}$ 8'32	0°12'09	evening set	1923 Sep 30 08:30	20° $\underline{45}$ '48	
min. Earth dist.	1917 Jan 17 15:00	27° $\overline{50}$ 9'25	8.07833 AU				
direct	1917 Mar 26 01:53	23° $\overline{53}$ 9'14		conjunction	1923 Oct 17 11:05	23° $\underline{40}$ '59	2°15'24
	1917 Jun 24 13:52	0° $\Omega$		minimum elong	1923 Oct 17 11:05	23° $\underline{40}$ '59	2°15'24
evening set	1917 Jul 09 16:56	1° $\Omega$ 51'55		max. Earth dist.	1923 Oct 17 09:40	23° $\underline{40}$ '33	10.70153 AU
				morning rise	1923 Nov 03 09:23	25° $\underline{40}$ '52	
conjunction	1917 Jul 27 20:26	4° $\Omega$ 11'31	0°26'10		1923 Dec 20 04:24	0° $\overline{M}$	
minimum elong	1917 Jul 27 20:24	4° $\Omega$ 11'31	0°26'10	retrograde	1924 Feb 11 01:16	2° $\overline{M}$ 20'12	
max. Earth dist.	1917 Jul 28 01:46	4° $\Omega$ 13'15	10.10704 AU		1924 Apr 06 08:37	30° $\overline{R}$ $\underline{4}$	
morning rise	1917 Aug 14 22:04	6° $\Omega$ 30'31		opposition	1924 Apr 19 08:52	29° $\underline{40}$ '13	2°45'31
retrograde	1917 Nov 26 04:38	14° $\Omega$ 32'28		min. Earth dist.	1924 Apr 19 09:42	29° $\underline{40}$ '04	8.75185 AU
opposition	1918 Jan 31 18:37	11° $\Omega$ 06'03	0°52'04	direct	1924 Jun 29 00:43	25° $\underline{43}$ '01	
min. Earth dist.	1918 Jan 31 14:15	11° $\Omega$ 06'57	8.14137 AU		1924 Sep 13 21:58	0° $\overline{M}$	
direct	1918 Apr 09 13:34	7° $\Omega$ 36'49		evening set	1924 Oct 11 21:28	3° $\overline{M}$ 07'02	
	1918 Jul 18 06:35	15° $\Omega$					
evening set	1918 Jul 24 13:10	15° $\Omega$ 46'47		conjunction	1924 Oct 28 20:35	5° $\overline{M}$ 09'03	2°12'33
				minimum elong	1924 Oct 28 20:35	5° $\overline{M}$ 09'03	2°12'32
conjunction	1918 Aug 11 14:02	18° $\Omega$ 04'29	0°57'04	max. Earth dist.	1924 Oct 28 18:38	5° $\overline{M}$ 08'28	10.79652 AU
minimum elong	1918 Aug 11 13:59	18° $\Omega$ 04'28	0°57'04	morning rise	1924 Nov 14 15:39	7° $\overline{M}$ 09'54	
max. Earth dist.	1918 Aug 11 19:15	18° $\Omega$ 06'09	10.18109 AU	retrograde	1925 Feb 22 04:52	14° $\overline{M}$ 18'52	
morning rise	1918 Aug 29 11:57	20° $\Omega$ 21'13		opposition	1925 May 01 22:26	11° $\overline{M}$ 00'35	2°38'12
retrograde	1918 Dec 09 21:31	28° $\Omega$ 15'03		min. Earth dist.	1925 May 01 23:38	11° $\overline{M}$ 00'21	8.84083 AU
opposition	1919 Feb 14 13:52	24° $\Omega$ 49'59	1°28'16	direct	1925 Jul 11 21:18	7° $\overline{M}$ 37'32	
min. Earth dist.	1919 Feb 14 09:21	24° $\Omega$ 50'54	8.22546 AU	evening set	1925 Oct 24 02:06	15° $\overline{M}$ 00'25	
direct	1919 Apr 23 21:10	21° $\Omega$ 21'06			1925 Oct 24 00:40	15° $\overline{M}$	
evening set	1919 Aug 08 02:34	29° $\Omega$ 26'32					
	1919 Aug 12 13:51	0° $\overline{M}$		conjunction	1925 Nov 09 22:29	17° $\overline{M}$ 00'42	2°04'01
				minimum elong	1925 Nov 09 22:31	17° $\overline{M}$ 00'42	2°04'01
conjunction	1919 Aug 25 23:38	1° $\overline{M}$ 41'44	1°24'14	max. Earth dist.	1925 Nov 09 20:19	17° $\overline{M}$ 00'03	10.87882 AU
minimum elong	1919 Aug 25 23:35	1° $\overline{M}$ 41'43	1°24'14	morning rise	1925 Nov 26 15:09	18° $\overline{M}$ 59'56	
max. Earth dist.	1919 Aug 26 04:34	1° $\overline{M}$ 43'18	10.27346 AU	retrograde	1926 Mar 06 04:53	26° $\overline{M}$ 04'38	
morning rise	1919 Sep 12 16:49	3° $\overline{M}$ 55'42		opposition	1926 May 14 08:20	22° $\overline{M}$ 46'50	2°24'21
retrograde	1919 Dec 23 08:08	11° $\overline{M}$ 40'51		min. Earth dist.	1926 May 14 10:33	22° $\overline{M}$ 46'25	8.91544 AU
opposition	1920 Feb 28 04:04	8° $\overline{M}$ 17'08	1°58'46	direct	1926 Jul 24 09:37	19° $\overline{M}$ 24'49	
min. Earth dist.	1920 Feb 27 23:50	8° $\overline{M}$ 17'59	8.32505 AU	evening set	1926 Nov 04 23:39	26° $\overline{M}$ 41'18	
direct	1920 May 07 00:04	4° $\overline{M}$ 48'51					
evening set	1920 Aug 21 07:13	12° $\overline{M}$ 48'18		conjunction	1926 Nov 21 17:52	28° $\overline{M}$ 40'13	1°50'26
				minimum elong	1926 Nov 21 17:54	28° $\overline{M}$ 40'14	1°50'26
conjunction	1920 Sep 07 23:43	15° $\overline{M}$ 00'40	1°46'18	max. Earth dist.	1926 Nov 21 14:38	28° $\overline{M}$ 39'15	10.94537 AU
minimum elong	1920 Sep 07 23:40	15° $\overline{M}$ 00'39	1°46'18		1926 Dec 02 22:34	0° $\overline{J}$	
max. Earth dist.	1920 Sep 08 04:00	15° $\overline{M}$ 02'01	10.37804 AU	morning rise	1926 Dec 08 09:07	0° $\overline{J}$ 38'19	
morning rise	1920 Sep 25 11:38	17° $\overline{M}$ 11'39		retrograde	1927 Mar 18 00:48	7° $\overline{J}$ 40'02	
retrograde	1921 Jan 04 10:52	24° $\overline{M}$ 48'04		opposition	1927 May 26 15:24	4° $\overline{J}$ 22'28	2°04'50
opposition	1921 Mar 12 13:06	21° $\overline{M}$ 25'41	2°22'13	min. Earth dist.	1927 May 26 18:56	4° $\overline{J}$ 21'48	8.97290 AU
min. Earth dist.	1921 Mar 12 10:10	21° $\overline{M}$ 26'17	8.43355 AU	direct	1927 Aug 05 18:58	1° $\overline{J}$ 01'21	
direct	1921 May 20 21:37	17° $\overline{M}$ 58'13		evening set	1927 Nov 16 15:39	8° $\overline{J}$ 12'24	
evening set	1921 Sep 04 01:47	25° $\overline{M}$ 50'41					
				conjunction	1927 Dec 03 08:15	10° $\overline{J}$ 10'20	1°32'31
conjunction	1921 Sep 21 13:21	28° $\overline{M}$ 00'08	2°02'24	minimum elong	1927 Dec 03 08:18	10° $\overline{J}$ 10'20	1°32'32
minimum elong	1921 Sep 21 13:18	28° $\overline{M}$ 00'07	2°02'24	max. Earth dist.	1927 Dec 03 03:38	10° $\overline{J}$ 08'57	10.99372 AU
max. Earth dist.	1921 Sep 21 16:01	28° $\overline{M}$ 00'58	10.48804 AU	morning rise	1927 Dec 19 22:50	12° $\overline{J}$ 07'40	
	1921 Oct 07 17:21	0° $\underline{A}$		retrograde	1928 Mar 28 20:37	19° $\overline{J}$ 07'52	
morning rise	1921 Oct 08 20:07	0° $\underline{A}$ 08'09		opposition	1928 Jun 06 20:18	15° $\overline{J}$ 50'15	1°40'33
retrograde	1922 Jan 17 05:56	7° $\underline{A}$ 36'22		min. Earth dist.	1928 Jun 07 00:11	15° $\overline{J}$ 49'32	9.01121 AU



direct	1928 Aug 17 00:17	12° $\mathring{A}$ 29'56		max. Earth dist.	1934 Feb 08 03:00	18° $\approx$ 47'41	10.85708 AU
evening set	1928 Nov 27 03:32	19° $\mathring{A}$ 36'37		morning rise	1934 Feb 25 02:02	20° $\approx$ 49'20	
				retrograde	1934 Jun 08 17:06	28° $\approx$ 11'08	
conjunction	1928 Dec 13 19:16	21° $\mathring{A}$ 34'00	1°11'04	opposition	1934 Aug 18 11:22	24° $\approx$ 49'03	-1°-27'-31
minimum elong	1928 Dec 13 19:18	21° $\mathring{A}$ 34'00	1°11'04	min. Earth dist.	1934 Aug 18 13:38	24° $\approx$ 48'38	8.81572 AU
max. Earth dist.	1928 Dec 13 14:44	21° $\mathring{A}$ 32'39	11.02224 AU	direct	1934 Oct 26 17:18	21° $\approx$ 29'54	
morning rise	1928 Dec 30 09:39	23° $\mathring{A}$ 31'00		evening set	1935 Feb 03 11:42	28° $\approx$ 39'59	
	1929 Mar 15 13:46	0° $\mathring{B}$			1935 Feb 14 14:08	0° $\mathring{K}$	
retrograde	1929 Apr 09 16:01	0° $\mathring{B}$ 31'08					
	1929 May 05 04:20	30° $\mathring{R}$ $\mathring{A}$		conjunction	1935 Feb 20 06:15	0° $\mathring{K}$ 41'16	-1°-22'-44
opposition	1929 Jun 19 00:05	27° $\mathring{A}$ 13'14	1°12'28	minimum elong	1935 Feb 20 06:13	0° $\mathring{K}$ 41'16	1°22'44
min. Earth dist.	1929 Jun 19 03:34	27° $\mathring{A}$ 12'35	9.02912 AU	max. Earth dist.	1935 Feb 20 03:05	0° $\mathring{K}$ 40'19	10.77071 AU
direct	1929 Aug 29 00:57	23° $\mathring{A}$ 53'34		morning rise	1935 Mar 09 04:02	2° $\mathring{K}$ 43'35	
	1929 Nov 30 04:22	0° $\mathring{B}$		retrograde	1935 Jun 21 14:27	10° $\mathring{K}$ 13'25	
evening set	1929 Dec 08 12:57	0° $\mathring{B}$ 57'12		opposition	1935 Aug 31 04:14	6° $\mathring{K}$ 50'07	-1°-55'-9
				min. Earth dist.	1935 Aug 31 06:08	6° $\mathring{K}$ 49'45	8.72346 AU
conjunction	1929 Dec 25 04:21	2° $\mathring{B}$ 54'23	0°46'54	direct	1935 Nov 07 21:59	3° $\mathring{K}$ 30'27	
minimum elong	1929 Dec 25 04:22	2° $\mathring{B}$ 54'23	0°46'54	evening set	1936 Feb 15 17:10	10° $\mathring{K}$ 45'59	
max. Earth dist.	1929 Dec 25 00:19	2° $\mathring{B}$ 53'11	11.02993 AU				
morning rise	1930 Jan 10 18:59	4° $\mathring{B}$ 51'24		conjunction	1936 Mar 03 13:30	12° $\mathring{K}$ 49'02	-1°-43'-19
retrograde	1930 Apr 21 14:31	11° $\mathring{B}$ 53'00		minimum elong	1936 Mar 03 13:27	12° $\mathring{K}$ 49'01	1°43'19
opposition	1930 Jul 01 03:38	8° $\mathring{B}$ 34'37	0°41'38	max. Earth dist.	1936 Mar 03 10:33	12° $\mathring{K}$ 48'08	10.67306 AU
min. Earth dist.	1930 Jul 01 07:01	8° $\mathring{B}$ 34'00	9.02596 AU	morning rise	1936 Mar 20 13:52	14° $\mathring{K}$ 53'18	
direct	1930 Sep 09 23:54	5° $\mathring{B}$ 15'27		retrograde	1936 Jul 03 18:52	22° $\mathring{K}$ 31'51	
evening set	1930 Dec 19 21:56	12° $\mathring{B}$ 17'26		opposition	1936 Sep 12 02:04	19° $\mathring{K}$ 07'17	-2°-18'-13
				min. Earth dist.	1936 Sep 12 03:43	19° $\mathring{K}$ 06'58	8.62201 AU
conjunction	1931 Jan 05 13:10	14° $\mathring{B}$ 14'46	0°20'54	direct	1936 Nov 19 07:07	15° $\mathring{K}$ 46'55	
minimum elong	1931 Jan 05 13:11	14° $\mathring{B}$ 14'46	0°20'53	evening set	1937 Feb 27 06:51	23° $\mathring{K}$ 08'59	
max. Earth dist.	1931 Jan 05 08:34	14° $\mathring{B}$ 13'25	11.01642 AU				
morning rise	1931 Jan 22 04:35	16° $\mathring{B}$ 12'12		conjunction	1937 Mar 16 05:43	25° $\mathring{K}$ 14'05	-1°-59'-32
retrograde	1931 May 03 14:28	23° $\mathring{B}$ 16'42		minimum elong	1937 Mar 16 05:41	25° $\mathring{K}$ 14'04	1°59'33
opposition	1931 Jul 13 07:57	19° $\mathring{B}$ 57'41	0°09'04	max. Earth dist.	1937 Mar 16 03:49	25° $\mathring{K}$ 13'29	10.56836 AU
min. Earth dist.	1931 Jul 13 12:01	19° $\mathring{B}$ 56'56	9.00184 AU	morning rise	1937 Apr 02 09:03	27° $\mathring{K}$ 20'33	
direct	1931 Sep 21 19:54	16° $\mathring{B}$ 38'48			1937 Apr 25 06:29	0° $\mathring{Y}$	
desc. node	1931 Oct 24 10:57	17° $\mathring{B}$ 30'48		retrograde	1937 Jul 17 05:18	5° $\mathring{Y}$ 08'03	
evening set	1931 Dec 31 07:55	23° $\mathring{B}$ 40'38		opposition	1937 Sep 25 04:58	1° $\mathring{Y}$ 42'14	-2°-35'-18
				min. Earth dist.	1937 Sep 25 05:56	1° $\mathring{Y}$ 42'03	8.51587 AU
conjunction	1932 Jan 16 23:19	25° $\mathring{B}$ 38'27	0°-6'-8		1937 Oct 18 03:42	30° $\mathring{R}$ $\mathring{K}$	
minimum elong	1932 Jan 16 23:20	25° $\mathring{B}$ 38'27	0°06'09	direct	1937 Dec 01 23:03	28° $\mathring{K}$ 21'01	
behind sun begin	1932 Jan 16 16:42	25° $\mathring{B}$ 36'31			1938 Jan 14 10:30	0° $\mathring{Y}$	
behind sun end	1932 Jan 17 05:57	25° $\mathring{B}$ 40'24		evening set	1938 Mar 12 05:32	5° $\mathring{Y}$ 50'26	
max. Earth dist.	1932 Jan 16 18:06	25° $\mathring{B}$ 36'56	10.98226 AU				
morning rise	1932 Feb 02 15:58	27° $\mathring{B}$ 36'39		conjunction	1938 Mar 29 07:39	7° $\mathring{Y}$ 57'51	-2°-10'-18
	1932 Feb 24 02:46	0° $\approx$		minimum elong	1938 Mar 29 07:38	7° $\mathring{Y}$ 57'51	2°10'20
retrograde	1932 May 14 16:46	4° $\approx$ 45'36		max. Earth dist.	1938 Mar 29 07:33	7° $\mathring{Y}$ 57'49	10.46133 AU
opposition	1932 Jul 24 14:12	1° $\approx$ 25'43	0°-24'-6	morning rise	1938 Apr 15 14:19	10° $\mathring{Y}$ 06'43	
min. Earth dist.	1932 Jul 24 18:19	1° $\approx$ 24'57	8.95764 AU	retrograde	1938 Jul 30 23:14	18° $\mathring{Y}$ 02'54	
	1932 Aug 13 11:15	30° $\mathring{R}$ $\mathring{B}$		opposition	1938 Oct 08 13:16	14° $\mathring{Y}$ 35'55	-2°-45'-7
direct	1932 Oct 02 17:38	28° $\mathring{B}$ 06'55		min. Earth dist.	1938 Oct 08 12:51	14° $\mathring{Y}$ 36'00	8.40984 AU
	1932 Nov 20 02:09	0° $\approx$		direct	1938 Dec 14 21:34	11° $\mathring{Y}$ 13'43	
evening set	1933 Jan 10 20:20	5° $\approx$ 10'04		evening set	1939 Mar 25 13:35	18° $\mathring{Y}$ 50'53	
conjunction	1933 Jan 27 12:28	7° $\approx$ 08'44	0°-33'-2	conjunction	1939 Apr 11 19:32	21° $\mathring{Y}$ 00'49	-2°-14'-42
minimum elong	1933 Jan 27 12:26	7° $\approx$ 08'43	0°33'02	minimum elong	1939 Apr 11 19:32	21° $\mathring{Y}$ 00'49	2°14'44
max. Earth dist.	1933 Jan 27 07:56	7° $\approx$ 07'23	10.92853 AU	max. Earth dist.	1939 Apr 11 20:52	21° $\mathring{Y}$ 01'14	10.35702 AU
morning rise	1933 Feb 13 06:30	9° $\approx$ 07'59		morning rise	1939 Apr 29 06:00	23° $\mathring{Y}$ 12'13	
	1933 Apr 15 11:29	15° $\approx$			1939 Jul 06 05:44	0° $\mathring{B}$	
retrograde	1933 May 27 02:19	16° $\approx$ 22'46		retrograde	1939 Aug 14 01:03	1° $\mathring{B}$ 16'16	
	1933 Jul 08 17:48	15° $\mathring{R}$ $\approx$			1939 Sep 22 05:19	30° $\mathring{R}$ $\mathring{Y}$	
opposition	1933 Aug 05 23:05	13° $\approx$ 01'51	0°-56'-44	opposition	1939 Oct 22 02:50	27° $\mathring{Y}$ 48'16	-2°-46'-33
min. Earth dist.	1933 Aug 06 02:22	13° $\approx$ 01'14	8.89484 AU	min. Earth dist.	1939 Oct 22 01:14	27° $\mathring{Y}$ 48'35	8.30893 AU
direct	1933 Oct 14 17:14	9° $\approx$ 42'58		direct	1939 Dec 28 01:11	24° $\mathring{Y}$ 24'57	
	1934 Jan 06 16:02	15° $\approx$			1940 Mar 20 09:40	0° $\mathring{B}$	
evening set	1934 Jan 22 13:08	16° $\approx$ 48'52		evening set	1940 Apr 07 07:19	2° $\mathring{B}$ 09'58	
conjunction	1934 Feb 08 06:21	18° $\approx$ 48'42	0°-58'-56	conjunction	1940 Apr 24 17:37	4° $\mathring{B}$ 22'29	-2°-12'-2
minimum elong	1934 Feb 08 06:19	18° $\approx$ 48'41	0°58'56	minimum elong	1940 Apr 24 17:38	4° $\mathring{B}$ 22'30	2°12'03



max. Earth dist.	1940 Apr 24 19:33	4°♄23'07	10.26045 AU		1946 Aug 02 14:41	0°♄	
morning rise	1940 May 12 08:19	6°♄36'28		morning rise	1946 Aug 09 00:13	0°♄48'54	
retrograde	1940 Aug 27 07:43	14°♄46'57		retrograde	1946 Nov 20 15:21	8°♄53'24	
opposition	1940 Nov 03 21:01	11°♄18'10	-2°-38'-55	opposition	1947 Jan 26 05:49	5°♄26'21	0°35'30
min. Earth dist.	1940 Nov 03 18:59	11°♄18'35	8.21789 AU	min. Earth dist.	1947 Jan 26 01:31	5°♄27'14	8.11767 AU
direct	1941 Jan 09 12:20	7°♄53'38		direct	1947 Apr 03 19:38	1°♄56'58	
	1941 Apr 15 05:48	15°♄		evening set	1947 Jul 18 15:09	10°♄07'34	
evening set	1941 Apr 21 10:12	15°♄46'17					
conjunction	1941 May 09 01:11	18°♄01'23	-2°-1'-58	conjunction	1947 Aug 05 17:24	12°♄26'04	0°44'19
minimum elong	1941 May 09 01:13	18°♄01'24	2°01'59	minimum elong	1947 Aug 05 17:22	12°♄26'03	0°44'20
max. Earth dist.	1941 May 09 03:00	18°♄01'58	10.17616 AU	max. Earth dist.	1947 Aug 05 22:37	12°♄27'44	10.15075 AU
morning rise	1941 May 26 20:17	20°♄17'48		morning rise	1947 Aug 23 16:55	14°♄43'42	
retrograde	1941 Sep 10 17:39	28°♄32'59		retrograde	1947 Aug 25 20:56	15°♄	
opposition	1941 Nov 17 19:19	25°♄03'44	-2°-22'-5	retrograde	1947 Dec 04 11:34	22°♄40'35	
min. Earth dist.	1941 Nov 17 17:24	25°♄04'08	8.14126 AU	opposition	1948 Feb 09 02:13	19°♄14'42	1°13'28
direct	1942 Jan 23 07:01	21°♄38'01		min. Earth dist.	1948 Feb 08 22:35	19°♄15'26	8.18887 AU
evening set	1942 May 05 21:26	29°♄37'42		direct	1948 Apr 17 03:19	15°♄45'21	
	1942 May 08 19:39	0°♄		evening set	1948 Aug 01 07:08	23°♄52'23	
conjunction	1942 May 23 17:03	1°♄55'08	-1°-44'-43	conjunction	1948 Aug 19 05:56	26°♄08'39	1°13'12
minimum elong	1942 May 23 17:06	1°♄55'09	1°44'44	minimum elong	1948 Aug 19 05:53	26°♄08'38	1°13'12
max. Earth dist.	1942 May 23 19:14	1°♄55'50	10.10903 AU	max. Earth dist.	1948 Aug 19 10:05	26°♄09'59	10.23141 AU
morning rise	1942 Jun 10 16:08	4°♄13'40		morning rise	1948 Sep 06 01:12	28°♄23'48	
retrograde	1942 Sep 25 05:38	12°♄31'24		retrograde	1948 Sep 19 04:35	0°♄	
opposition	1942 Dec 01 20:43	9°♄02'01	-1°-56'-36	retrograde	1948 Dec 17 00:20	6°♄12'19	
min. Earth dist.	1942 Dec 01 18:32	9°♄02'28	8.08442 AU	opposition	1949 Feb 21 18:01	2°♄47'41	1°46'32
direct	1943 Feb 06 07:52	5°♄35'11		min. Earth dist.	1949 Feb 21 15:14	2°♄48'15	8.27819 AU
evening set	1943 May 20 15:36	13°♄40'41		direct	1949 Apr 03 03:41	30°♄♄	
conjunction	1943 Jun 07 15:23	15°♄59'59	-1°-21'-4	evening set	1949 May 01 08:34	29°♄18'42	
minimum elong	1943 Jun 07 15:27	16°♄00'00	1°21'06		1949 May 29 12:57	0°♄	
max. Earth dist.	1943 Jun 07 18:33	16°♄01'01	10.06434 AU	conjunction	1949 Aug 15 15:03	7°♄20'35	
morning rise	1943 Jun 25 17:38	18°♄20'04		conjunction	1949 Sep 02 09:28	9°♄34'11	1°37'32
retrograde	1943 Oct 09 18:17	26°♄37'54		minimum elong	1949 Sep 02 09:25	9°♄34'10	1°37'33
opposition	1943 Dec 15 23:52	23°♄08'40	-1°-23'-50	max. Earth dist.	1949 Sep 02 12:22	9°♄35'05	10.32749 AU
min. Earth dist.	1943 Dec 15 20:59	23°♄09'15	8.05211 AU	morning rise	1949 Sep 19 23:49	11°♄46'28	
direct	1944 Feb 20 13:18	19°♄40'50		retrograde	1949 Dec 30 04:04	19°♄26'26	
evening set	1944 Jun 03 14:44	27°♄50'34		opposition	1950 Mar 07 04:49	16°♄03'05	2°13'06
	1944 Jun 20 07:47	0°♄		min. Earth dist.	1950 Mar 07 02:25	16°♄03'34	8.38030 AU
conjunction	1944 Jun 21 17:39	0°♄11'01	0°-52'-24	direct	1950 May 15 09:22	12°♄34'46	
minimum elong	1944 Jun 21 17:42	0°♄11'02	0°52'25	evening set	1950 Aug 29 13:18	20°♄30'12	
max. Earth dist.	1944 Jun 21 21:52	0°♄12'23	10.04574 AU	conjunction	1950 Sep 16 02:58	22°♄40'55	1°56'15
morning rise	1944 Jul 09 21:44	2°♄31'50		minimum elong	1950 Sep 16 02:55	22°♄40'54	1°56'15
retrograde	1944 Oct 23 05:37	10°♄47'18		max. Earth dist.	1950 Sep 16 05:01	22°♄41'34	10.43349 AU
opposition	1944 Dec 29 03:25	7°♄18'31	0°-45'-49	morning rise	1950 Oct 03 12:12	24°♄50'16	
min. Earth dist.	1944 Dec 28 23:40	7°♄19'17	8.04688 AU		1950 Nov 20 15:49	0°♄	
direct	1945 Mar 05 22:43	3°♄49'54		retrograde	1951 Jan 12 01:17	2°♄21'54	
evening set	1945 Jun 18 16:20	12°♄01'58		opposition	1951 Mar 07 12:14	30°♄♄	
conjunction	1945 Jul 06 20:47	14°♄22'40	0°-20'-32	min. Earth dist.	1951 Mar 20 10:11	28°♄59'48	2°32'09
minimum elong	1945 Jul 06 20:48	14°♄22'40	0°20'33	direct	1951 Mar 20 07:53	29°♄00'15	8.48942 AU
max. Earth dist.	1945 Jul 07 01:57	14°♄24'20	10.05463 AU	evening set	1951 May 29 03:37	25°♄32'24	
morning rise	1945 Jul 25 00:57	16°♄43'18			1951 Aug 13 16:43	0°♄	
retrograde	1945 Nov 06 13:02	24°♄54'10		conjunction	1951 Sep 12 01:35	3°♄20'35	
opposition	1946 Jan 12 05:49	21°♄26'07	0°-5'-7	conjunction	1951 Sep 29 10:33	5°♄28'28	2°08'43
min. Earth dist.	1946 Jan 12 01:24	21°♄27'02	8.06922 AU	minimum elong	1951 Sep 29 10:31	5°♄28'27	2°08'43
asc. node	1946 Feb 28 12:37	18°♄18'41		max. Earth dist.	1951 Sep 29 12:17	5°♄29'00	10.54372 AU
direct	1946 Mar 20 09:29	17°♄56'59		morning rise	1951 Oct 16 14:48	7°♄34'55	
evening set	1946 Jul 03 17:26	26°♄09'20		retrograde	1952 Jan 24 17:55	14°♄58'43	
conjunction	1946 Jul 21 21:39	28°♄29'22	0°12'27	opposition	1952 Apr 01 10:11	11°♄37'50	2°43'17
minimum elong	1946 Jul 21 21:38	28°♄29'21	0°12'28	min. Earth dist.	1952 Apr 01 08:32	11°♄38'09	8.59993 AU
behind sun begin	1946 Jul 21 16:59	28°♄27'52		direct	1952 Jun 10 13:19	8°♄11'33	
behind sun end	1946 Jul 22 02:18	28°♄30'51		evening set	1952 Sep 24 03:43	15°♄52'04	
max. Earth dist.	1946 Jul 22 03:16	28°♄31'10	10.09046 AU	conjunction	1952 Oct 11 08:17	17°♄57'18	2°14'47
				minimum elong	1952 Oct 11 08:16	17°♄57'18	2°14'46



max. Earth dist.	1952 Oct 11 09:25	17°♄57'39	10.65276 AU	max. Earth dist.	1958 Dec 20 07:45	28°♄05'42	11.04794 AU
morning rise	1952 Oct 28 08:07	20°♄01'10			1959 Jan 05 13:32	0°♄	
retrograde	1953 Feb 05 02:31	27°♄17'55		morning rise	1959 Jan 06 02:47	0°♄03'50	
opposition	1953 Apr 14 05:25	23°♄58'09	2°46'31	retrograde	1959 Apr 16 15:32	7°♄03'52	
min. Earth dist.	1953 Apr 14 05:00	23°♄58'13	8.70663 AU	opposition	1959 Jun 26 02:46	3°♄46'19	0°55'34
direct	1953 Jun 23 17:26	20°♄33'06		min. Earth dist.	1959 Jun 26 06:49	3°♄45'34	9.04994 AU
evening set	1953 Oct 06 20:00	28°♄05'55		direct	1959 Sep 05 01:01	0°♄27'30	
	1953 Oct 22 15:35	0°♄		evening set	1959 Dec 15 05:45	7°♄29'27	
conjunction	1953 Oct 23 20:38	0°♄08'48	2°14'33	conjunction	1959 Dec 31 20:51	9°♄26'27	0°32'37
minimum elong	1953 Oct 23 20:39	0°♄08'48	2°14'32	minimum elong	1959 Dec 31 20:52	9°♄26'27	0°32'37
max. Earth dist.	1953 Oct 23 20:27	0°♄08'44	10.75567 AU	max. Earth dist.	1959 Dec 31 16:07	9°♄25'03	11.04583 AU
morning rise	1953 Nov 09 16:59	2°♄10'26		morning rise	1960 Jan 17 11:51	11°♄23'27	
retrograde	1954 Feb 17 06:16	9°♄21'11		retrograde	1960 Apr 27 14:06	18°♄25'45	
opposition	1954 Apr 26 20:07	6°♄02'22	2°42'16	opposition	1960 Jul 07 06:25	15°♄07'38	0°23'41
min. Earth dist.	1954 Apr 26 21:03	6°♄02'11	8.80483 AU	min. Earth dist.	1960 Jul 07 10:11	15°♄06'57	9.03631 AU
direct	1954 Jul 06 15:53	2°♄38'35		direct	1960 Sep 15 22:48	11°♄49'14	
evening set	1954 Oct 19 03:37	10°♄04'03		evening set	1960 Dec 25 14:51	18°♄50'18	
conjunction	1954 Nov 05 01:02	12°♄04'57	2°08'25	conjunction	1961 Jan 11 06:10	20°♄47'39	0°06'03
minimum elong	1954 Nov 05 01:03	12°♄04'57	2°08'25	minimum elong	1961 Jan 11 06:10	20°♄47'39	0°06'03
max. Earth dist.	1954 Nov 04 23:08	12°♄04'23	10.84805 AU	behind sun begin	1961 Jan 10 23:31	20°♄45'42	
morning rise	1954 Nov 21 18:49	14°♄04'46		behind sun end	1961 Jan 11 12:48	20°♄49'35	
	1954 Nov 29 17:03	15°♄		max. Earth dist.	1961 Jan 11 01:46	20°♄46'22	11.02101 AU
retrograde	1955 Mar 01 06:19	21°♄10'38		morning rise	1961 Jan 27 22:00	22°♄45'14	
opposition	1955 May 09 06:40	17°♄52'34	2°31'10	desc. node	1961 Apr 04 18:56	28°♄52'44	
min. Earth dist.	1955 May 09 08:10	17°♄52'17	8.89035 AU	retrograde	1961 May 09 16:21	29°♄51'19	
	1955 Jun 24 05:47	15°♄		opposition	1961 Jul 19 11:24	26°♄32'24	0°-9'-16
direct	1955 Jul 19 07:30	14°♄30'03		min. Earth dist.	1961 Jul 19 15:12	26°♄31'42	9.00006 AU
	1955 Aug 13 04:21	15°♄		direct	1961 Sep 27 19:31	23°♄14'10	
evening set	1955 Oct 31 03:38	21°♄48'46			1962 Jan 03 19:01	0°♄	
conjunction	1955 Nov 16 22:40	23°♄48'06	1°56'59	evening set	1962 Jan 06 01:55	0°♄15'55	
minimum elong	1955 Nov 16 22:42	23°♄48'07	1°56'59	conjunction	1962 Jan 22 17:39	2°♄13'59	0°-21'-2
max. Earth dist.	1955 Nov 16 20:14	23°♄47'23	10.92610 AU	minimum elong	1962 Jan 22 17:38	2°♄13'59	0°21'03
morning rise	1955 Dec 03 14:33	25°♄46'32		max. Earth dist.	1962 Jan 22 12:25	2°♄12'26	10.97378 AU
	1956 Jan 12 18:45	0°♄		morning rise	1962 Feb 08 10:49	4°♄12'31	
retrograde	1956 Mar 12 03:29	2°♄48'50		retrograde	1962 May 21 23:22	11°♄23'53	
	1956 May 14 03:46	30°♄		opposition	1962 Jul 31 18:49	8°♄04'00	0°-42'-14
opposition	1956 May 20 14:16	29°♄31'17	2°14'02	min. Earth dist.	1962 Jul 31 23:14	8°♄03'11	8.94221 AU
min. Earth dist.	1956 May 20 15:52	29°♄30'59	8.95980 AU	direct	1962 Oct 09 16:25	4°♄45'40	
direct	1956 Jul 30 18:36	26°♄09'57		evening set	1963 Jan 17 16:36	11°♄49'42	
	1956 Oct 10 15:10	0°♄		conjunction	1963 Feb 03 09:03	13°♄48'48	0°-47'-30
evening set	1956 Nov 10 21:22	3°♄22'43		minimum elong	1963 Feb 03 09:01	13°♄48'47	0°47'30
conjunction	1956 Nov 27 14:43	5°♄20'54	1°40'54	max. Earth dist.	1963 Feb 03 02:59	13°♄46'59	10.90602 AU
minimum elong	1956 Nov 27 14:45	5°♄20'55	1°40'54		1963 Feb 13 07:19	15°♄	
max. Earth dist.	1956 Nov 27 12:25	5°♄20'13	10.98677 AU	morning rise	1963 Feb 20 03:55	15°♄48'37	
morning rise	1956 Dec 14 05:23	7°♄18'22		retrograde	1963 Jun 03 09:39	23°♄06'39	
retrograde	1957 Mar 24 00:45	14°♄18'30		opposition	1963 Aug 13 05:32	19°♄45'34	-1°-13'-58
opposition	1957 Jun 01 19:40	11°♄01'12	1°51'45	min. Earth dist.	1963 Aug 13 10:17	19°♄44'40	8.86544 AU
min. Earth dist.	1957 Jun 01 21:50	11°♄00'48	9.01065 AU	direct	1963 Oct 21 16:22	16°♄26'52	
direct	1957 Aug 11 23:57	7°♄40'55		evening set	1964 Jan 29 12:16	23°♄34'39	
evening set	1957 Nov 22 10:40	14°♄48'48		conjunction	1964 Feb 15 06:00	25°♄35'07	-1°-12'-21
conjunction	1957 Dec 09 02:46	16°♄46'13	1°20'56	minimum elong	1964 Feb 15 05:58	25°♄35'06	1°12'22
minimum elong	1957 Dec 09 02:49	16°♄46'14	1°20'56	max. Earth dist.	1964 Feb 15 00:40	25°♄33'30	10.82097 AU
max. Earth dist.	1957 Dec 08 23:35	16°♄45'17	11.02789 AU	morning rise	1964 Mar 03 02:48	27°♄36'31	
morning rise	1957 Dec 25 17:02	18°♄43'09			1964 Mar 24 04:17	0°♄	
retrograde	1958 Apr 04 19:38	25°♄42'29		retrograde	1964 Jun 15 03:25	5°♄02'21	
opposition	1958 Jun 13 23:27	22°♄25'12	1°25'15	opposition	1964 Aug 24 20:18	1°♄39'52	-1°-43'-10
min. Earth dist.	1958 Jun 14 02:53	22°♄24'34	9.04113 AU	min. Earth dist.	1964 Aug 25 00:13	1°♄39'08	8.77332 AU
direct	1958 Aug 24 00:31	19°♄05'45			1964 Sep 16 21:04	30°♄	
evening set	1958 Dec 03 20:58	26°♄10'01		direct	1964 Nov 01 20:44	28°♄20'35	
conjunction	1958 Dec 20 12:17	28°♄07'02	0°57'53		1964 Dec 16 05:38	0°♄	
minimum elong	1958 Dec 20 12:19	28°♄07'03	0°57'53	evening set	1965 Feb 09 14:16	5°♄33'21	



conjunction	1965 Feb 26 09:49	7° $\text{K}$ 35'32	-1°-34'-30		1971 Jun 18 16:08	0° $\text{II}$	
minimum elong	1965 Feb 26 09:47	7° $\text{K}$ 35'31	1°34'31	retrograde	1971 Sep 19 02:17	6° $\text{II}$ 31'43	
max. Earth dist.	1965 Feb 26 05:54	7° $\text{K}$ 34'20	10.72231 AU	opposition	1971 Nov 25 23:05	3° $\text{II}$ 01'40	-2°-9'-9
morning rise	1965 Mar 15 08:51	9° $\text{K}$ 38'49		min. Earth dist.	1971 Nov 25 19:44	3° $\text{II}$ 02'21	8.08795 AU
retrograde	1965 Jun 28 05:32	17° $\text{K}$ 13'16			1972 Jan 10 03:44	30° $\text{R}$ $\text{B}$	
opposition	1965 Sep 06 15:39	13° $\text{K}$ 49'18	-2°-8'-28	direct	1972 Jan 31 10:22	29° $\text{B}$ 34'44	
min. Earth dist.	1965 Sep 06 18:18	13° $\text{K}$ 48'48	8.66975 AU		1972 Feb 21 14:51	0° $\text{II}$	
direct	1965 Nov 14 03:17	10° $\text{K}$ 29'14		evening set	1972 May 13 09:42	7° $\text{II}$ 38'30	
evening set	1966 Feb 22 00:07	17° $\text{K}$ 48'12					
conjunction	1966 Mar 10 21:51	19° $\text{K}$ 52'21	-1°-52'-50	conjunction	1972 May 31 07:55	9° $\text{II}$ 57'18	-1°-32'-26
minimum elong	1966 Mar 10 21:49	19° $\text{K}$ 52'20	1°52'51	minimum elong	1972 May 31 07:58	9° $\text{II}$ 57'19	1°32'27
max. Earth dist.	1966 Mar 10 18:47	19° $\text{K}$ 51'24	10.61433 AU	max. Earth dist.	1972 May 31 12:22	9° $\text{II}$ 58'45	10.06317 AU
morning rise	1966 Mar 27 23:35	21° $\text{K}$ 57'47		morning rise	1972 Jun 18 08:51	12° $\text{II}$ 17'00	
retrograde	1966 Jul 11 13:03	29° $\text{K}$ 41'17		retrograde	1972 Oct 02 16:25	20° $\text{II}$ 35'54	
opposition	1966 Sep 19 16:02	26° $\text{K}$ 15'51	-2°-28'-26	opposition	1972 Dec 09 01:52	17° $\text{II}$ 05'55	-1°-39'-23
min. Earth dist.	1966 Sep 19 17:44	26° $\text{K}$ 15'31	8.55924 AU	min. Earth dist.	1972 Dec 08 22:01	17° $\text{II}$ 06'43	8.04649 AU
direct	1966 Nov 26 15:33	22° $\text{K}$ 54'48		direct	1973 Feb 13 12:49	13° $\text{II}$ 37'59	
	1967 Mar 03 21:31	0° $\text{Y}$		evening set	1973 May 28 07:16	21° $\text{II}$ 46'40	
evening set	1967 Mar 06 18:33	0° $\text{Y}$ 20'58		conjunction	1973 Jun 15 09:00	24° $\text{II}$ 06'56	-1°-5'-46
conjunction	1967 Mar 23 19:01	2° $\text{Y}$ 27'22	-2°-6'-12	minimum elong	1973 Jun 15 09:03	24° $\text{II}$ 06'56	1°05'47
minimum elong	1967 Mar 23 19:00	2° $\text{Y}$ 27'21	2°06'13	max. Earth dist.	1973 Jun 15 13:55	24° $\text{II}$ 08'31	10.03524 AU
max. Earth dist.	1967 Mar 23 16:17	2° $\text{Y}$ 26'30	10.50195 AU	morning rise	1973 Jul 03 12:27	26° $\text{II}$ 27'44	
morning rise	1967 Apr 10 00:05	4° $\text{Y}$ 35'12			1973 Aug 01 22:20	0° $\text{B}$	
retrograde	1967 Jul 25 04:08	12° $\text{Y}$ 27'45		retrograde	1973 Oct 17 05:50	4° $\text{B}$ 45'13	
opposition	1967 Oct 02 22:03	9° $\text{Y}$ 00'56	-2°-41'-44	opposition	1973 Dec 23 05:51	1° $\text{B}$ 15'42	-1°-3'-21
min. Earth dist.	1967 Oct 02 23:17	9° $\text{Y}$ 00'42	8.44691 AU	min. Earth dist.	1973 Dec 23 01:47	1° $\text{B}$ 16'32	8.03186 AU
direct	1967 Dec 09 10:27	5° $\text{Y}$ 38'47		direct	1974 Jan 07 20:27	30° $\text{R}$ $\text{II}$	
evening set	1968 Mar 18 22:07	13° $\text{Y}$ 12'44			1974 Feb 27 21:13	27° $\text{II}$ 47'00	
conjunction	1968 Apr 05 02:08	15° $\text{Y}$ 21'38	-2°-13'-35	evening set	1974 Apr 18 22:33	0° $\text{B}$	
minimum elong	1968 Apr 05 02:08	15° $\text{Y}$ 21'38	2°13'37		1974 Jun 12 08:17	5° $\text{B}$ 58'49	
max. Earth dist.	1968 Apr 05 00:28	15° $\text{Y}$ 21'07	10.39050 AU	conjunction	1974 Jun 30 12:11	8° $\text{B}$ 19'42	0°-35'-3
morning rise	1968 Apr 22 11:00	17° $\text{Y}$ 32'03		minimum elong	1974 Jun 30 12:13	8° $\text{B}$ 19'42	0°35'04
retrograde	1968 Aug 07 02:22	25° $\text{Y}$ 33'09		max. Earth dist.	1974 Jun 30 17:25	8° $\text{B}$ 21'24	10.03493 AU
opposition	1968 Oct 15 09:25	22° $\text{Y}$ 05'06	-2°-47'-6	morning rise	1974 Jul 18 16:38	10° $\text{B}$ 40'43	
min. Earth dist.	1968 Oct 15 10:01	22° $\text{Y}$ 04'59	8.33814 AU	retrograde	1974 Oct 31 14:56	18° $\text{B}$ 54'30	
direct	1968 Dec 21 11:38	18° $\text{Y}$ 41'44		opposition	1975 Jan 06 09:25	15° $\text{B}$ 25'47	0°-23'-27
evening set	1969 Apr 01 11:30	26° $\text{Y}$ 23'50		min. Earth dist.	1975 Jan 06 05:12	15° $\text{B}$ 26'39	8.04528 AU
conjunction	1969 Apr 18 19:48	28° $\text{Y}$ 35'23	-2°-14'-11	direct	1975 Mar 14 08:32	11° $\text{B}$ 56'36	
minimum elong	1969 Apr 18 19:48	28° $\text{Y}$ 35'23	2°14'12	evening set	1975 Jun 27 10:19	20° $\text{B}$ 09'36	
max. Earth dist.	1969 Apr 18 19:46	28° $\text{Y}$ 35'22	10.28543 AU	conjunction	1975 Jul 15 14:46	22° $\text{B}$ 30'10	0°-2'-19
	1969 Apr 29 22:23	0° $\text{B}$		minimum elong	1975 Jul 15 14:46	22° $\text{B}$ 30'10	0°02'20
morning rise	1969 May 06 08:46	0° $\text{B}$ 48'25		behind sun begin	1975 Jul 15 07:25	22° $\text{B}$ 27'48	
retrograde	1969 Aug 21 05:44	8° $\text{B}$ 56'54		behind sun end	1975 Jul 15 22:08	22° $\text{B}$ 32'32	
opposition	1969 Oct 29 01:42	5° $\text{B}$ 27'53	-2°-43'-38	max. Earth dist.	1975 Jul 15 20:10	22° $\text{B}$ 31'53	10.06244 AU
min. Earth dist.	1969 Oct 29 01:09	5° $\text{B}$ 27'59	8.23844 AU	morning rise	1975 Aug 02 18:31	24° $\text{B}$ 50'28	
direct	1970 Jan 03 21:06	2° $\text{B}$ 03'16		asc. node	1975 Aug 10 15:41	25° $\text{B}$ 49'50	
evening set	1970 Apr 15 10:25	9° $\text{B}$ 53'22			1975 Sep 17 04:56	0° $\text{Q}$	
conjunction	1970 May 02 23:25	12° $\text{B}$ 07'35	-2°-7'-27	retrograde	1975 Nov 14 19:25	2° $\text{Q}$ 58'33	
minimum elong	1970 May 02 23:27	12° $\text{B}$ 07'35	2°07'28		1976 Jan 14 13:17	30° $\text{R}$ $\text{B}$	
max. Earth dist.	1970 May 03 01:20	12° $\text{B}$ 08'11	10.19237 AU	opposition	1976 Jan 20 11:00	29° $\text{B}$ 30'56	0°17'36
morning rise	1970 May 20 16:37	14° $\text{B}$ 23'10		min. Earth dist.	1976 Jan 20 06:31	29° $\text{B}$ 31'52	8.08602 AU
	1970 May 25 14:35	15° $\text{B}$		direct	1976 Mar 27 19:58	26° $\text{B}$ 01'34	
retrograde	1970 Sep 04 13:57	22° $\text{B}$ 37'23		evening set	1976 Jun 05 05:08	0° $\text{Q}$	
opposition	1970 Nov 11 22:34	19° $\text{B}$ 07'40	-2°-30'-54		1976 Jul 11 10:30	4° $\text{Q}$ 13'42	
min. Earth dist.	1970 Nov 11 20:30	19° $\text{B}$ 08'06	8.15334 AU	conjunction	1976 Jul 29 13:49	6° $\text{Q}$ 33'05	0°30'24
direct	1971 Jan 17 13:01	15° $\text{B}$ 41'52		minimum elong	1976 Jul 29 13:47	6° $\text{Q}$ 33'05	0°30'25
evening set	1971 Apr 29 18:05	23° $\text{B}$ 39'18		max. Earth dist.	1976 Jul 29 19:25	6° $\text{Q}$ 34'53	10.11598 AU
conjunction	1971 May 17 11:53	25° $\text{B}$ 56'01	-1°-53'-22	morning rise	1976 Aug 16 15:05	8° $\text{Q}$ 51'47	
minimum elong	1971 May 17 11:56	25° $\text{B}$ 56'02	1°53'23		1976 Oct 12 22:32	15° $\text{Q}$	
max. Earth dist.	1971 May 17 15:28	25° $\text{B}$ 57'10	10.11672 AU	retrograde	1976 Nov 27 18:46	16° $\text{Q}$ 52'42	
morning rise	1971 Jun 04 09:14	28° $\text{B}$ 13'54			1977 Jan 13 13:46	15° $\text{R}$ $\text{Q}$	
				opposition	1977 Feb 02 09:36	13° $\text{Q}$ 26'20	0°57'06
				min. Earth dist.	1977 Feb 02 04:42	13° $\text{Q}$ 27'20	8.15140 AU



direct	1977 Apr 11 05:41	9°♄57'06		direct	1983 Jul 01 12:31	27°♄43'21	
	1977 Jun 30 04:32	15°♄			1983 Aug 24 11:53	0°♄	
evening set	1977 Jul 26 05:55	18°♄06'22		evening set	1983 Oct 14 07:02	5°♄12'21	
conjunction	1977 Aug 13 06:28	20°♄23'47	1°00'52	conjunction	1983 Oct 31 05:56	7°♄14'09	2°11'35
minimum elong	1977 Aug 13 06:26	20°♄23'46	1°00'52	minimum elong	1983 Oct 31 05:57	7°♄14'09	2°11'35
max. Earth dist.	1977 Aug 13 12:18	20°♄25'39	10.19204 AU	max. Earth dist.	1983 Oct 31 04:22	7°♄13'40	10.80941 AU
morning rise	1977 Aug 31 03:49	22°♄40'10		morning rise	1983 Nov 17 00:41	9°♄14'46	
	1977 Nov 17 02:41	0°♄			1984 Jan 15 01:04	15°♄	
retrograde	1977 Dec 11 12:11	0°♄32'55		retrograde	1984 Feb 24 14:36	16°♄23'03	
	1978 Jan 05 00:46	30°♄♂			1984 Apr 06 05:53	15°♄♂	
opposition	1978 Feb 16 04:08	27°♄07'56	1°32'36	opposition	1984 May 03 08:21	13°♄04'55	2°36'33
min. Earth dist.	1978 Feb 15 23:15	27°♄08'56	8.23721 AU	min. Earth dist.	1984 May 03 10:06	13°♄04'35	8.85251 AU
direct	1978 Apr 25 12:16	23°♄39'07		direct	1984 Jul 13 06:16	9°♄42'03	
	1978 Jul 26 12:02	0°♄			1984 Oct 07 04:14	15°♄	
evening set	1978 Aug 09 18:16	1°♄43'44		evening set	1984 Oct 25 10:53	17°♄04'08	
conjunction	1978 Aug 27 14:53	3°♄58'37	1°27'23	conjunction	1984 Nov 11 07:01	19°♄04'13	2°02'21
minimum elong	1978 Aug 27 14:49	3°♄58'36	1°27'24	minimum elong	1984 Nov 11 07:03	19°♄04'14	2°02'21
max. Earth dist.	1978 Aug 27 20:24	4°♄00'22	10.28588 AU	max. Earth dist.	1984 Nov 11 04:11	19°♄03'23	10.88918 AU
morning rise	1978 Sep 14 07:24	6°♄12'14		morning rise	1984 Nov 27 23:34	21°♄03'20	
retrograde	1978 Dec 24 21:12	13°♄56'19		retrograde	1985 Mar 07 12:38	28°♄07'34	
opposition	1979 Mar 01 17:42	10°♄32'44	2°02'12	opposition	1985 May 15 17:57	24°♄49'54	2°21'54
min. Earth dist.	1979 Mar 01 13:39	10°♄33'33	8.33813 AU	min. Earth dist.	1985 May 15 21:03	24°♄49'19	8.92435 AU
direct	1979 May 09 14:53	7°♄04'33		direct	1985 Jul 25 19:34	21°♄28'03	
evening set	1979 Aug 23 21:43	15°♄03'07		evening set	1985 Nov 06 07:45	28°♄43'55	
					1985 Nov 17 02:09	0°♄♂	
conjunction	1979 Sep 10 13:40	17°♄15'08	1°48'41	conjunction	1985 Nov 23 01:45	0°♄♂42'42	1°48'09
minimum elong	1979 Sep 10 13:36	17°♄15'07	1°48'42	minimum elong	1985 Nov 23 01:48	0°♄♂42'43	1°48'09
max. Earth dist.	1979 Sep 10 18:01	17°♄16'30	10.39165 AU	max. Earth dist.	1985 Nov 22 21:27	0°♄♂41'25	10.95276 AU
morning rise	1979 Sep 28 01:02	19°♄25'46		morning rise	1985 Dec 09 17:03	2°♄♂40'43	
retrograde	1980 Jan 06 22:42	27°♄01'10		retrograde	1986 Mar 19 09:27	9°♄♂42'14	
opposition	1980 Mar 14 02:02	23°♄38'58	2°24'37	opposition	1986 May 28 00:42	6°♄♂24'45	2°01'42
min. Earth dist.	1980 Mar 13 23:35	23°♄39'27	8.44779 AU	min. Earth dist.	1986 May 28 04:35	6°♄♂24'02	8.97866 AU
direct	1980 May 22 11:50	20°♄11'37		direct	1986 Aug 07 04:50	3°♄♂03'48	
evening set	1980 Sep 05 15:10	28°♄03'07		evening set	1986 Nov 17 23:19	10°♄♂14'23	
	1980 Sep 21 10:48	0°♄					
conjunction	1980 Sep 23 02:08	0°♄12'12	2°03'56	conjunction	1986 Dec 04 15:56	12°♄♂12'17	1°29'44
minimum elong	1980 Sep 23 02:05	0°♄12'11	2°03'57	minimum elong	1986 Dec 04 15:59	12°♄♂12'18	1°29'44
max. Earth dist.	1980 Sep 23 04:15	0°♄12'51	10.50275 AU	max. Earth dist.	1986 Dec 04 11:04	12°♄♂10'51	10.99783 AU
morning rise	1980 Oct 10 08:28	2°♄19'52		morning rise	1986 Dec 21 06:32	14°♄♂09'36	
retrograde	1981 Jan 18 16:58	9°♄47'03		retrograde	1987 Mar 31 04:42	21°♄♂09'47	
opposition	1981 Mar 27 04:53	6°♄26'07	2°39'13	opposition	1987 Jun 09 05:20	17°♄♂52'13	1°36'51
min. Earth dist.	1981 Mar 27 03:51	6°♄26'19	8.55941 AU	min. Earth dist.	1987 Jun 09 09:00	17°♄♂51'32	9.01350 AU
direct	1981 Jun 05 02:12	2°♄59'47		direct	1987 Aug 19 08:53	14°♄♂32'01	
evening set	1981 Sep 18 22:12	10°♄43'44		evening set	1987 Nov 29 11:03	21°♄♂38'29	
conjunction	1981 Oct 06 04:30	12°♄50'04	2°12'47	conjunction	1987 Dec 16 02:53	23°♄♂35'52	1°07'52
minimum elong	1981 Oct 06 04:28	12°♄50'04	2°12'47	minimum elong	1987 Dec 16 02:55	23°♄♂35'52	1°07'52
max. Earth dist.	1981 Oct 06 04:30	12°♄50'04	10.61269 AU	max. Earth dist.	1987 Dec 15 22:33	23°♄♂34'35	11.02278 AU
morning rise	1981 Oct 23 06:18	14°♄55'02		morning rise	1988 Jan 01 17:15	25°♄♂32'53	
retrograde	1982 Jan 31 03:46	22°♄14'51			1988 Feb 13 23:50	0°♄♂	
opposition	1982 Apr 09 02:30	18°♄55'03	2°45'51	retrograde	1988 Apr 11 02:08	2°♄♂33'13	
min. Earth dist.	1982 Apr 09 02:23	18°♄55'04	8.66690 AU		1988 Jun 10 05:22	30°♄♂♂	
direct	1982 Jun 18 11:05	15°♄29'51		opposition	1988 Jun 20 09:13	29°♄♂15'20	1°08'22
evening set	1982 Oct 01 19:07	23°♄06'14		min. Earth dist.	1988 Jun 20 12:55	29°♄♂14'39	9.02779 AU
				direct	1988 Aug 30 10:07	25°♄♂55'45	
conjunction	1982 Oct 18 21:24	25°♄10'06	2°15'14		1988 Nov 12 09:26	0°♄♂	
minimum elong	1982 Oct 18 21:24	25°♄10'06	2°15'14	evening set	1988 Dec 09 20:35	2°♄♂59'20	
max. Earth dist.	1982 Oct 18 20:18	25°♄09'46	10.71620 AU				
morning rise	1982 Nov 04 19:20	27°♄12'42		conjunction	1988 Dec 26 11:57	4°♄♂56'34	0°43'25
	1982 Nov 29 10:29	0°♄♂		minimum elong	1988 Dec 26 11:58	4°♄♂56'35	0°43'24
retrograde	1983 Feb 12 11:17	4°♄♂26'14		max. Earth dist.	1988 Dec 26 07:17	4°♄♂55'12	11.02688 AU
opposition	1983 Apr 21 19:27	1°♄07'22	2°44'47	morning rise	1989 Jan 12 02:42	6°♄♂53'41	
min. Earth dist.	1983 Apr 21 19:56	1°♄07'16	8.76573 AU	retrograde	1989 Apr 22 23:37	13°♄♂55'39	
	1983 May 06 19:30	30°♄♂♂		opposition	1989 Jul 02 13:08	10°♄♂37'15	0°37'14



min. Earth dist.	1989 Jul 02 17:26	10°☾36'27	9.02116 AU	morning rise	1995 Mar 23 02:12	17°☿05'15	
direct	1989 Sep 11 07:10	7°☾18'05		retrograde	1995 Jul 06 07:46	24°☿45'07	
evening set	1989 Dec 21 05:49	14°☾20'14		opposition	1995 Sep 14 15:19	21°☿20'18	-2°-20'-52
				min. Earth dist.	1995 Sep 14 17:02	21°☿19'58	8.60387 AU
conjunction	1990 Jan 06 21:02	16°☾17'39	0°17'14	direct	1995 Nov 21 19:48	17°☿59'43	
minimum elong	1990 Jan 06 21:03	16°☾17'39	0°17'14	evening set	1996 Feb 29 19:47	25°☿22'56	
max. Earth dist.	1990 Jan 06 15:26	16°☾16'00	11.01003 AU				
morning rise	1990 Jan 23 12:42	18°☾15'14		conjunction	1996 Mar 17 19:04	27°☿28'22	-2°-1'-16
retrograde	1990 May 04 22:43	25°☾20'20		minimum elong	1996 Mar 17 19:02	27°☿28'22	2°01'18
opposition	1990 Jul 14 17:44	22°☾01'12	0°04'32	max. Earth dist.	1996 Mar 17 17:59	27°☿28'02	10.54999 AU
min. Earth dist.	1990 Jul 14 22:27	22°☾00'19	8.99385 AU	morning rise	1996 Apr 03 22:38	29°☿35'10	
desc. node	1990 Sep 04 05:12	18°☾59'49			1996 Apr 07 08:49	0°☿	
direct	1990 Sep 23 05:10	18°☾42'15		retrograde	1996 Jul 18 20:29	7°☿24'02	
evening set	1991 Jan 01 16:10	25°☾44'28		opposition	1996 Sep 26 19:11	3°☿57'58	-2°-37'-1
				min. Earth dist.	1996 Sep 26 19:27	3°☿57'54	8.49762 AU
conjunction	1991 Jan 18 07:45	27°☾42'26	0°-9'-49	direct	1996 Dec 03 12:39	0°☿36'32	
minimum elong	1991 Jan 18 07:44	27°☾42'26	0°09'50	evening set	1997 Mar 13 19:46	8°☿07'08	
behind sun begin	1991 Jan 18 02:00	27°☾40'45					
behind sun end	1991 Jan 18 13:28	27°☾44'07		conjunction	1997 Mar 30 22:20	10°☿14'56	-2°-11'-13
max. Earth dist.	1991 Jan 18 02:31	27°☾40'54	10.97273 AU	minimum elong	1997 Mar 30 22:19	10°☿14'55	2°11'14
morning rise	1991 Feb 04 00:32	29°☾40'47		max. Earth dist.	1997 Mar 30 22:49	10°☿15'05	10.44330 AU
	1991 Feb 06 18:51	0°☿		morning rise	1997 Apr 17 05:21	12°☿24'10	
retrograde	1991 May 17 04:05	6°☿50'32		retrograde	1997 Aug 01 16:56	20°☿21'39	
opposition	1991 Jul 27 00:21	3°☿30'28	0°-28'-37	opposition	1997 Oct 10 04:26	16°☿54'27	-2°-45'-42
min. Earth dist.	1991 Jul 27 04:19	3°☿29'44	8.94665 AU	min. Earth dist.	1997 Oct 10 03:19	16°☿54'40	8.39240 AU
direct	1991 Oct 05 03:57	0°☿11'35		direct	1997 Dec 16 10:29	13°☿32'03	
evening set	1992 Jan 13 05:14	7°☿15'16		evening set	1998 Mar 27 05:20	21°☿10'28	
conjunction	1992 Jan 29 21:33	9°☿14'08	0°-36'-39	conjunction	1998 Apr 13 11:41	23°☿20'46	-2°-14'-39
minimum elong	1992 Jan 29 21:31	9°☿14'07	0°36'39	minimum elong	1998 Apr 13 11:41	23°☿20'46	2°14'40
max. Earth dist.	1992 Jan 29 17:25	9°☿12'54	10.91612 AU	max. Earth dist.	1998 Apr 13 12:56	23°☿21'09	10.34038 AU
morning rise	1992 Feb 15 15:39	11°☿13'35		morning rise	1998 Apr 30 22:38	25°☿32'33	
	1992 Mar 21 16:50	15°☿			1998 Jun 09 06:07	0°☿	
retrograde	1992 May 28 13:36	18°☿29'20		retrograde	1998 Aug 15 19:09	3°☿37'42	
opposition	1992 Aug 07 09:53	15°☿08'12	-1°-1'-3	opposition	1998 Oct 23 18:49	0°☿09'34	-2°-45'-54
min. Earth dist.	1992 Aug 07 12:50	15°☿07'39	8.88120 AU	min. Earth dist.	1998 Oct 23 17:03	0°☿09'55	8.29344 AU
	1992 Aug 09 05:43	15°☿			1998 Oct 25 18:41	30°☿☿	
direct	1992 Oct 16 02:06	11°☿49'12		direct	1998 Dec 29 15:45	26°☿46'04	
	1992 Dec 18 09:54	15°☿			1999 Mar 01 01:26	0°☿	
evening set	1993 Jan 23 22:52	18°☿55'50		evening set	1999 Apr 10 00:21	4°☿32'18	
conjunction	1993 Feb 09 16:10	20°☿55'52	-1°-2'-19	conjunction	1999 Apr 27 11:04	6°☿45'11	-2°-10'-57
minimum elong	1993 Feb 09 16:08	20°☿55'51	1°02'19	minimum elong	1999 Apr 27 11:05	6°☿45'12	2°10'58
max. Earth dist.	1993 Feb 09 12:26	20°☿54'44	10.84228 AU	max. Earth dist.	1999 Apr 27 12:50	6°☿45'45	10.24647 AU
morning rise	1993 Feb 26 12:04	22°☿56'44		morning rise	1999 May 15 02:21	8°☿59'30	
	1993 May 21 04:58	0°☿			1999 Jul 10 00:42	15°☿	
retrograde	1993 Jun 10 05:27	0°☿19'40		retrograde	1999 Aug 30 01:23	17°☿10'51	
	1993 Jun 30 08:29	30°☿☿			1999 Oct 21 01:43	15°☿☿	
opposition	1993 Aug 19 23:01	26°☿57'21	-1°-31'-29	opposition	1999 Nov 06 13:53	13°☿42'00	-2°-36'-59
min. Earth dist.	1993 Aug 20 01:36	26°☿56'52	8.79998 AU	min. Earth dist.	1999 Nov 06 11:53	13°☿42'24	8.20572 AU
direct	1993 Oct 28 03:39	23°☿38'00		direct	2000 Jan 12 04:59	10°☿17'18	
	1994 Jan 28 23:43	0°☿			2000 Mar 27 13:22	15°☿	
evening set	1994 Feb 04 22:24	0°☿49'00		evening set	2000 Apr 23 04:16	18°☿10'57	
conjunction	1994 Feb 21 17:03	2°☿50'32	-1°-25'-44	conjunction	2000 May 10 19:45	20°☿26'22	-1°-59'-53
minimum elong	1994 Feb 21 17:00	2°☿50'31	1°25'44	minimum elong	2000 May 10 19:48	20°☿26'23	1°59'53
max. Earth dist.	1994 Feb 21 13:07	2°☿49'20	10.75413 AU	max. Earth dist.	2000 May 10 21:56	20°☿27'04	10.16612 AU
morning rise	1994 Mar 10 15:11	4°☿53'08		morning rise	2000 May 28 15:24	22°☿43'04	
retrograde	1994 Jun 23 03:57	12°☿24'11			2000 Aug 10 02:26	0°☿	
opposition	1994 Sep 01 16:40	9°☿00'39	-1°-58'-33	retrograde	2000 Sep 12 11:34	0°☿58'43	
min. Earth dist.	1994 Sep 01 19:13	9°☿00'09	8.70621 AU		2000 Oct 16 00:45	30°☿☿	
direct	1994 Nov 09 08:36	5°☿40'45		opposition	2000 Nov 19 12:41	27°☿29'26	-2°-18'-54
evening set	1995 Feb 17 04:56	12°☿57'21		min. Earth dist.	2000 Nov 19 10:39	27°☿29'51	8.13335 AU
				direct	2001 Jan 25 00:24	24°☿03'34	
					2001 Apr 20 21:59	0°☿	
conjunction	1995 Mar 06 01:32	15°☿00'41	-1°-45'-45	evening set	2001 May 07 16:22	2°☿03'57	
minimum elong	1995 Mar 06 01:30	15°☿00'40	1°45'47				
max. Earth dist.	1995 Mar 05 22:36	14°☿59'47	10.65523 AU				



conjunction	2001 May 25 12:33	4° <u>II</u> 21'38	-1°-41'-42		2007 Sep 02 13:48	0° <u>mp</u>	
minimum elong	2001 May 25 12:37	4° <u>II</u> 21'39	1°41'43	morning rise	2007 Sep 08 18:17	0° <u>mp</u> 46'33	
max. Earth dist.	2001 May 25 15:29	4° <u>II</u> 22'34	10.10326 AU	retrograde	2007 Dec 19 14:10	8° <u>mp</u> 34'04	
morning rise	2001 Jun 12 12:03	6° <u>II</u> 40'22		opposition	2008 Feb 24 09:48	5° <u>mp</u> 09'38	1°50'34
retrograde	2001 Sep 27 00:04	14° <u>II</u> 58'11		min. Earth dist.	2008 Feb 24 06:49	5° <u>mp</u> 10'14	8.29140 AU
opposition	2001 Dec 03 14:13	11° <u>II</u> 28'48	-1°-52'-21	direct	2008 May 03 03:07	1° <u>mp</u> 40'48	
min. Earth dist.	2001 Dec 03 11:35	11° <u>II</u> 29'21	8.08060 AU	evening set	2008 Aug 17 08:04	9° <u>mp</u> 41'53	
direct	2002 Feb 08 01:32	8° <u>II</u> 01'53					
evening set	2002 May 22 11:07	16° <u>II</u> 07'52		conjunction	2008 Sep 04 02:00	11° <u>mp</u> 55'07	1°40'25
				minimum elong	2008 Sep 04 01:56	11° <u>mp</u> 55'06	1°40'25
conjunction	2002 Jun 09 11:24	18° <u>II</u> 27'19	-1°-17'-17	max. Earth dist.	2008 Sep 04 04:55	11° <u>mp</u> 56'03	10.34125 AU
minimum elong	2002 Jun 09 11:27	18° <u>II</u> 27'20	1°17'18	morning rise	2008 Sep 21 15:47	14° <u>mp</u> 07'04	
max. Earth dist.	2002 Jun 09 15:29	18° <u>II</u> 28'39	10.06242 AU	retrograde	2008 Dec 31 18:08	21° <u>mp</u> 46'01	
morning rise	2002 Jun 27 13:50	20° <u>II</u> 47'30		opposition	2009 Mar 08 19:53	18° <u>mp</u> 22'51	2°16'07
retrograde	2002 Oct 11 13:01	29° <u>II</u> 05'07		min. Earth dist.	2009 Mar 08 16:59	18° <u>mp</u> 23'25	8.39445 AU
opposition	2002 Dec 17 17:28	25° <u>II</u> 35'57	-1°-18'-45	direct	2009 May 17 02:06	14° <u>mp</u> 54'41	
min. Earth dist.	2002 Dec 17 13:50	25° <u>II</u> 36'42	8.05195 AU	evening set	2009 Aug 31 05:10	22° <u>mp</u> 49'11	
direct	2003 Feb 22 07:41	22° <u>II</u> 08'07					
	2003 Jun 04 01:28	0° <u>III</u>		conjunction	2009 Sep 17 18:22	24° <u>mp</u> 59'33	1°58'16
evening set	2003 Jun 06 10:27	0° <u>III</u> 18'05		minimum elong	2009 Sep 17 18:19	24° <u>mp</u> 59'32	1°58'17
				max. Earth dist.	2009 Sep 17 21:03	25° <u>mp</u> 00'23	10.44783 AU
conjunction	2003 Jun 24 13:39	2° <u>III</u> 38'35	0°-48'-5	morning rise	2009 Oct 05 02:56	27° <u>mp</u> 08'30	
minimum elong	2003 Jun 24 13:42	2° <u>III</u> 38'35	0°48'06		2009 Oct 29 17:09	0° <u>III</u>	
max. Earth dist.	2003 Jun 24 18:45	2° <u>III</u> 40'14	10.04735 AU	retrograde	2010 Jan 13 15:56	4° <u>III</u> 39'09	
morning rise	2003 Jul 12 17:43	4° <u>III</u> 59'23		opposition	2010 Mar 22 00:37	1° <u>III</u> 17'12	2°34'04
retrograde	2003 Oct 25 23:42	13° <u>III</u> 14'24		min. Earth dist.	2010 Mar 21 22:13	1° <u>III</u> 17'40	8.50381 AU
opposition	2003 Dec 31 20:57	9° <u>III</u> 45'45	0°-40'-14		2010 Apr 07 18:52	30° <u>R</u> <u>mp</u>	
min. Earth dist.	2003 Dec 31 16:40	9° <u>III</u> 46'38	8.05013 AU	direct	2010 May 30 18:09	27° <u>mp</u> 49'57	
direct	2004 Mar 07 16:51	6° <u>III</u> 17'10			2010 Jul 21 15:10	0° <u>III</u>	
evening set	2004 Jun 20 12:07	14° <u>III</u> 29'14		evening set	2010 Sep 13 16:12	5° <u>III</u> 37'05	
conjunction	2004 Jul 08 16:38	16° <u>III</u> 49'53	0°-15'-59	conjunction	2010 Oct 01 00:42	7° <u>III</u> 44'38	2°09'51
minimum elong	2004 Jul 08 16:39	16° <u>III</u> 49'53	0°15'59	minimum elong	2010 Oct 01 00:40	7° <u>III</u> 44'38	2°09'51
max. Earth dist.	2004 Jul 08 22:12	16° <u>III</u> 51'41	10.05952 AU	max. Earth dist.	2010 Oct 01 02:50	7° <u>III</u> 45'18	10.55796 AU
morning rise	2004 Jul 26 20:39	19° <u>III</u> 10'24		morning rise	2010 Oct 18 04:22	9° <u>III</u> 50'46	
retrograde	2004 Nov 08 06:54	27° <u>III</u> 20'36		retrograde	2011 Jan 26 06:10	17° <u>III</u> 13'36	
asc. node	2005 Jan 08 17:08	24° <u>III</u> 18'39		opposition	2011 Apr 03 23:56	13° <u>III</u> 52'49	2°44'04
opposition	2005 Jan 13 23:06	23° <u>III</u> 52'45	0°00'34	min. Earth dist.	2011 Apr 03 22:51	13° <u>III</u> 53'02	8.61393 AU
min. Earth dist.	2005 Jan 13 18:45	23° <u>III</u> 53'39	8.07562 AU	direct	2011 Jun 13 03:51	10° <u>III</u> 26'39	
direct	2005 Mar 22 02:54	20° <u>III</u> 23'39		evening set	2011 Sep 26 17:09	18° <u>III</u> 06'07	
evening set	2005 Jul 05 13:01	28° <u>III</u> 35'49					
	2005 Jul 16 12:30	0° <u>IV</u>		conjunction	2011 Oct 13 21:13	20° <u>III</u> 11'02	2°15'00
				minimum elong	2011 Oct 13 21:12	20° <u>III</u> 11'02	2°15'00
conjunction	2005 Jul 23 17:01	0° <u>IV</u> 55'41	0°16'57	max. Earth dist.	2011 Oct 13 21:48	20° <u>III</u> 11'13	10.66628 AU
minimum elong	2005 Jul 23 17:00	0° <u>IV</u> 55'41	0°16'58	morning rise	2011 Oct 30 20:41	22° <u>III</u> 14'37	
max. Earth dist.	2005 Jul 23 22:24	0° <u>IV</u> 57'24	10.09830 AU	retrograde	2012 Feb 07 14:03	29° <u>III</u> 30'29	
morning rise	2005 Aug 10 19:19	3° <u>IV</u> 15'00		opposition	2012 Apr 15 18:26	26° <u>III</u> 10'47	2°46'14
retrograde	2005 Nov 22 09:01	11° <u>IV</u> 18'40		min. Earth dist.	2012 Apr 15 18:42	26° <u>III</u> 10'44	8.71961 AU
opposition	2006 Jan 27 22:48	7° <u>IV</u> 51'50	0°40'57	direct	2012 Jun 25 08:00	22° <u>III</u> 45'49	
min. Earth dist.	2006 Jan 27 18:59	7° <u>IV</u> 52'37	8.12684 AU		2012 Oct 05 20:34	0° <u>IV</u>	
direct	2006 Apr 05 12:54	4° <u>IV</u> 22'32		evening set	2012 Oct 08 08:20	0° <u>IV</u> 17'37	
evening set	2006 Jul 20 10:06	12° <u>IV</u> 32'43					
				conjunction	2012 Oct 25 08:32	2° <u>IV</u> 20'14	2°13'55
conjunction	2006 Aug 07 11:54	14° <u>IV</u> 50'57	0°48'30	minimum elong	2012 Oct 25 08:33	2° <u>IV</u> 20'14	2°13'55
minimum elong	2006 Aug 07 11:52	14° <u>IV</u> 50'57	0°48'30	max. Earth dist.	2012 Oct 25 07:27	2° <u>IV</u> 19'54	10.76788 AU
max. Earth dist.	2006 Aug 07 16:28	14° <u>IV</u> 52'25	10.16111 AU	morning rise	2012 Nov 11 04:40	4° <u>IV</u> 21'37	
	2006 Aug 08 16:06	15° <u>IV</u>		retrograde	2013 Feb 18 17:02	11° <u>IV</u> 31'35	
morning rise	2006 Aug 25 11:02	17° <u>IV</u> 08'19		opposition	2013 Apr 28 08:27	8° <u>IV</u> 12'48	2°40'59
retrograde	2006 Dec 06 04:07	25° <u>IV</u> 04'16		min. Earth dist.	2013 Apr 28 09:22	8° <u>IV</u> 12'37	8.81619 AU
opposition	2007 Feb 10 18:42	21° <u>IV</u> 38'35	1°18'20	direct	2013 Jul 08 05:12	4° <u>IV</u> 49'06	
min. Earth dist.	2007 Feb 10 15:23	21° <u>IV</u> 39'16	8.20036 AU	evening set	2013 Oct 20 14:50	12° <u>IV</u> 13'35	
direct	2007 Apr 19 21:24	18° <u>IV</u> 09'21					
evening set	2007 Aug 04 01:11	26° <u>IV</u> 15'47		conjunction	2013 Nov 06 12:01	14° <u>IV</u> 14'17	2°07'01
				minimum elong	2013 Nov 06 12:02	14° <u>IV</u> 14'17	2°07'01
conjunction	2007 Aug 21 23:28	28° <u>IV</u> 31'43	1°16'49	max. Earth dist.	2013 Nov 06 10:06	14° <u>IV</u> 13'42	10.85846 AU
minimum elong	2007 Aug 21 23:25	28° <u>IV</u> 31'42	1°16'49		2013 Nov 12 20:30	15° <u>IV</u>	
max. Earth dist.	2007 Aug 22 03:05	28° <u>IV</u> 32'52	10.24381 AU	morning rise	2013 Nov 23 05:35	16° <u>IV</u> 13'55	



retrograde	2014 Mar 02 16:19	23° <del>ℳ</del> 19'10			2020 Mar 22 03:58	0°≈	
opposition	2014 May 10 18:28	20° <del>ℳ</del> 01'05	2°29'00	retrograde	2020 May 11 04:09	1°≈57'25	
min. Earth dist.	2014 May 10 19:32	20° <del>ℳ</del> 00'53	8.89967 AU		2020 Jul 01 23:37	30° <del>℞</del> 3	
direct	2014 Jul 20 20:35	16° <del>ℳ</del> 38'38		opposition	2020 Jul 20 22:28	28° <del>3</del> 38'28	0°-13'-55
evening set	2014 Nov 01 13:52	23° <del>ℳ</del> 56'29		min. Earth dist.	2020 Jul 21 02:37	28° <del>3</del> 37'41	8.99470 AU
				direct	2020 Sep 29 05:11	25° <del>3</del> 20'14	
conjunction	2014 Nov 18 08:50	25° <del>ℳ</del> 55'40	1°54'53		2020 Dec 17 05:04	0°≈	
minimum elong	2014 Nov 18 08:52	25° <del>ℳ</del> 55'40	1°54'54	evening set	2021 Jan 07 11:19	2°≈22'12	
max. Earth dist.	2014 Nov 18 06:53	25° <del>ℳ</del> 55'05	10.93429 AU				
morning rise	2014 Dec 05 00:33	27° <del>ℳ</del> 53'57		conjunction	2021 Jan 24 03:01	4°≈20'21	0°-24'-47
	2014 Dec 23 16:34	0° <del>♊</del>		minimum elong	2021 Jan 24 03:00	4°≈20'21	0°24'48
retrograde	2015 Mar 14 15:02	4° <del>♊</del> 55'48		max. Earth dist.	2021 Jan 23 21:13	4°≈18'38	10.96766 AU
opposition	2015 May 23 01:35	1° <del>♊</del> 38'14	2°11'05	morning rise	2021 Feb 09 20:26	6°≈19'01	
min. Earth dist.	2015 May 23 03:20	1° <del>♊</del> 37'54	8.96670 AU	retrograde	2021 May 23 09:19	13°≈31'02	
	2015 Jun 15 00:36	30° <del>℞</del> ℳ		opposition	2021 Aug 02 06:14	10°≈11'04	0°-46'-44
direct	2015 Aug 02 05:53	28° <del>ℳ</del> 16'57		min. Earth dist.	2021 Aug 02 11:06	10°≈10'10	8.93529 AU
	2015 Sep 18 02:49	0° <del>♊</del>		direct	2021 Oct 11 02:17	6°≈52'43	
evening set	2015 Nov 13 07:03	5° <del>♊</del> 29'01		evening set	2022 Jan 19 02:29	13°≈57'09	
					2022 Jan 27 22:49	15°≈	
conjunction	2015 Nov 30 00:16	7° <del>♊</del> 27'06	1°38'13	conjunction	2022 Feb 04 19:05	15°≈56'23	0°-51'-3
minimum elong	2015 Nov 30 00:18	7° <del>♊</del> 27'07	1°38'14	minimum elong	2022 Feb 04 19:03	15°≈56'22	0°51'03
max. Earth dist.	2015 Nov 29 21:36	7° <del>♊</del> 26'19	10.99239 AU	max. Earth dist.	2022 Feb 04 13:11	15°≈54'37	10.89826 AU
morning rise	2015 Dec 16 14:54	9° <del>♊</del> 24'29		morning rise	2022 Feb 21 14:06	17°≈56'21	
retrograde	2016 Mar 25 10:01	16° <del>♊</del> 24'19		retrograde	2022 Jun 04 21:47	25°≈15'11	
opposition	2016 Jun 03 06:37	13° <del>♊</del> 07'00	1°48'10	opposition	2022 Aug 14 17:10	21°≈54'00	-1°-18'-9
min. Earth dist.	2016 Jun 03 09:38	13° <del>♊</del> 06'27	9.01490 AU	min. Earth dist.	2022 Aug 14 21:47	21°≈53'09	8.85684 AU
direct	2016 Aug 13 09:50	9° <del>♊</del> 46'45		direct	2022 Oct 23 04:07	18°≈35'18	
evening set	2016 Nov 23 19:53	16° <del>♊</del> 54'09		evening set	2023 Jan 30 22:51	25°≈43'38	
conjunction	2016 Dec 10 11:51	18° <del>♊</del> 51'30	1°17'47	conjunction	2023 Feb 16 16:48	27°≈44'17	-1°-15'-34
minimum elong	2016 Dec 10 11:53	18° <del>♊</del> 51'31	1°17'48	minimum elong	2023 Feb 16 16:46	27°≈44'17	1°15'34
max. Earth dist.	2016 Dec 10 07:41	18° <del>♊</del> 50'16	11.03082 AU	max. Earth dist.	2023 Feb 16 12:05	27°≈42'52	10.81143 AU
morning rise	2016 Dec 27 02:15	20° <del>♊</del> 48'25		morning rise	2023 Mar 05 13:41	29°≈45'52	
retrograde	2017 Apr 06 05:06	27° <del>♊</del> 47'41			2023 Mar 07 13:35	0° <del>♋</del>	
opposition	2017 Jun 15 10:18	24° <del>♊</del> 30'22	1°21'11	retrograde	2023 Jun 17 17:27	7° <del>♋</del> 12'39	
min. Earth dist.	2017 Jun 15 14:03	24° <del>♊</del> 29'40	9.04267 AU	opposition	2023 Aug 27 08:28	3° <del>♋</del> 50'05	-1°-46'-51
direct	2017 Aug 25 12:08	21° <del>♊</del> 10'56		min. Earth dist.	2023 Aug 27 11:50	3° <del>♋</del> 49'27	8.76301 AU
evening set	2017 Dec 05 05:46	28° <del>♊</del> 14'53		direct	2023 Nov 04 07:03	0° <del>♋</del> 30'49	
	2017 Dec 20 04:49	0° <del>3</del>		evening set	2024 Feb 12 01:44	7° <del>♋</del> 44'19	
conjunction	2017 Dec 21 21:08	0° <del>3</del> 11'54	0°54'24	conjunction	2024 Feb 28 21:25	9° <del>♋</del> 46'41	-1°-37'-13
minimum elong	2017 Dec 21 21:10	0° <del>3</del> 11'55	0°54'24	minimum elong	2024 Feb 28 21:23	9° <del>♋</del> 46'40	1°37'14
max. Earth dist.	2017 Dec 21 16:38	0° <del>3</del> 10'35	11.04818 AU	max. Earth dist.	2024 Feb 28 17:21	9° <del>♋</del> 45'26	10.71121 AU
morning rise	2018 Jan 07 11:44	2° <del>3</del> 08'43		morning rise	2024 Mar 16 20:38	11° <del>♋</del> 50'11	
retrograde	2018 Apr 18 01:46	9° <del>3</del> 08'56		retrograde	2024 Jun 29 19:06	19° <del>♋</del> 25'41	
opposition	2018 Jun 27 13:28	5° <del>3</del> 51'19	0°51'09	opposition	2024 Sep 08 04:35	16° <del>♋</del> 01'39	-2°-11'-27
min. Earth dist.	2018 Jun 27 17:05	5° <del>3</del> 50'39	9.04882 AU	min. Earth dist.	2024 Sep 08 07:12	16° <del>♋</del> 01'09	8.65807 AU
direct	2018 Sep 06 11:08	2° <del>3</del> 32'32		direct	2024 Nov 15 14:20	12° <del>♋</del> 41'33	
evening set	2018 Dec 16 14:35	9° <del>3</del> 34'22		evening set	2025 Feb 23 12:36	20° <del>♋</del> 01'24	
conjunction	2019 Jan 02 05:50	11° <del>3</del> 31'25	0°28'55	conjunction	2025 Mar 12 10:29	22° <del>♋</del> 05'47	-1°-54'-54
minimum elong	2019 Jan 02 05:50	11° <del>3</del> 31'25	0°28'54	minimum elong	2025 Mar 12 10:27	22° <del>♋</del> 05'47	1°54'55
max. Earth dist.	2019 Jan 02 01:40	11° <del>3</del> 30'11	11.04348 AU	max. Earth dist.	2025 Mar 12 06:40	22° <del>♋</del> 04'37	10.60217 AU
morning rise	2019 Jan 18 20:51	13° <del>3</del> 28'28		morning rise	2025 Mar 29 12:36	24° <del>♋</del> 11'29	
retrograde	2019 Apr 30 00:54	20° <del>3</del> 31'08			2025 May 25 03:36	0° <del>♌</del>	
opposition	2019 Jul 09 17:07	17° <del>3</del> 12'57	0°19'05	retrograde	2025 Jul 13 04:07	1° <del>♌</del> 56'04	
min. Earth dist.	2019 Jul 09 20:34	17° <del>3</del> 12'19	9.03279 AU		2025 Sep 01 08:06	30° <del>℞</del> ♋	
direct	2019 Sep 18 08:47	13° <del>3</del> 54'35		opposition	2025 Sep 21 05:45	28° <del>♋</del> 30'34	-2°-30'-34
evening set	2019 Dec 27 23:56	20° <del>3</del> 55'44		min. Earth dist.	2025 Sep 21 08:01	28° <del>♋</del> 30'08	8.54677 AU
				direct	2025 Nov 28 03:52	25° <del>♋</del> 09'27	
conjunction	2020 Jan 13 15:16	22° <del>3</del> 53'10	0°02'15		2026 Feb 14 00:11	0° <del>♌</del>	
minimum elong	2020 Jan 13 15:16	22° <del>3</del> 53'10	0°02'15	evening set	2026 Mar 08 08:07	2° <del>♌</del> 36'35	
behind sun begin	2020 Jan 13 08:17	22° <del>3</del> 51'07					
behind sun end	2020 Jan 13 22:14	22° <del>3</del> 55'12		conjunction	2026 Mar 25 08:55	4° <del>♌</del> 43'16	-2°-7'-29
max. Earth dist.	2020 Jan 13 10:39	22° <del>3</del> 51'50	11.01652 AU	minimum elong	2026 Mar 25 08:54	4° <del>♌</del> 43'15	2°07'30
morning rise	2020 Jan 30 07:14	24° <del>3</del> 50'50		max. Earth dist.	2026 Mar 25 05:51	4° <del>♌</del> 42'18	10.48931 AU
desc. node	2020 Feb 13 05:53	26° <del>3</del> 25'25					



morning rise	2026 Apr 11 14:24	6° $\Upsilon$ 51'24		min. Earth dist.	2032 Dec 24 19:04	3° $\Theta$ 42'18	8.03160 AU
retrograde	2026 Jul 26 19:56	14° $\Upsilon$ 45'00		direct	2033 Mar 01 16:02	0° $\Theta$ 12'40	
opposition	2026 Oct 04 12:29	11° $\Upsilon$ 18'07	-2°-42'-48	evening set	2033 Jun 14 03:35	8° $\Theta$ 24'38	
min. Earth dist.	2026 Oct 04 14:10	11° $\Upsilon$ 17'47	8.43425 AU				
direct	2026 Dec 10 23:31	7° $\Upsilon$ 55'52		conjunction	2033 Jul 02 07:38	10° $\Theta$ 45'30	0°-30'-37
evening set	2027 Mar 21 12:48	15° $\Upsilon$ 30'51		minimum elong	2033 Jul 02 07:40	10° $\Theta$ 45'30	0°30'38
				max. Earth dist.	2033 Jul 02 12:50	10° $\Theta$ 47'11	10.03623 AU
conjunction	2027 Apr 07 17:18	17° $\Upsilon$ 40'03	-2°-13'-58	morning rise	2033 Jul 20 12:07	13° $\Theta$ 06'28	
minimum elong	2027 Apr 07 17:18	17° $\Upsilon$ 40'03	2°14'00	retrograde	2033 Nov 02 07:03	21° $\Theta$ 19'39	
max. Earth dist.	2027 Apr 07 16:09	17° $\Upsilon$ 39'41	10.37798 AU	opposition	2034 Jan 08 02:12	17° $\Theta$ 50'58	0°-17'-50
morning rise	2027 Apr 25 02:31	19° $\Upsilon$ 50'45		min. Earth dist.	2034 Jan 07 21:43	17° $\Theta$ 51'54	8.04806 AU
retrograde	2027 Aug 09 18:06	27° $\Upsilon$ 52'49		direct	2034 Mar 16 02:29	14° $\Theta$ 21'41	
opposition	2027 Oct 18 00:35	24° $\Upsilon$ 24'42	-2°-47'00	asc. node	2034 Jun 21 15:38	21° $\Theta$ 37'32	
min. Earth dist.	2027 Oct 18 00:55	24° $\Upsilon$ 24'38	8.32600 AU	evening set	2034 Jun 29 05:21	22° $\Theta$ 34'33	
direct	2027 Dec 24 02:46	21° $\Upsilon$ 01'14					
evening set	2028 Apr 03 03:19	28° $\Upsilon$ 44'19		conjunction	2034 Jul 17 09:49	24° $\Theta$ 55'02	0°02'18
	2028 Apr 13 03:39	0° $\Xi$		minimum elong	2034 Jul 17 09:48	24° $\Theta$ 55'02	0°02'18
				behind sun begin	2034 Jul 17 02:27	24° $\Theta$ 52'41	
conjunction	2028 Apr 20 12:10	0° $\Xi$ 56'11	-2°-13'-34	behind sun end	2034 Jul 17 17:10	24° $\Theta$ 57'24	
minimum elong	2028 Apr 20 12:11	0° $\Xi$ 56'11	2°13'35	max. Earth dist.	2034 Jul 17 15:41	24° $\Theta$ 56'55	10.06667 AU
max. Earth dist.	2028 Apr 20 12:59	0° $\Xi$ 56'27	10.27382 AU	morning rise	2034 Aug 04 13:18	27° $\Theta$ 15'11	
morning rise	2028 May 08 01:29	3° $\Xi$ 09'31			2034 Aug 27 02:46	0° $\Omega$	
retrograde	2028 Aug 22 22:17	11° $\Xi$ 18'49		retrograde	2034 Nov 16 12:00	5° $\Omega$ 22'31	
opposition	2028 Oct 30 17:33	7° $\Xi$ 49'42	-2°-42'-16	opposition	2035 Jan 22 03:25	1° $\Omega$ 54'55	0°23'07
min. Earth dist.	2028 Oct 30 16:21	7° $\Xi$ 49'57	8.22757 AU	min. Earth dist.	2035 Jan 21 22:15	1° $\Omega$ 55'58	8.09161 AU
direct	2029 Jan 05 12:39	4° $\Xi$ 25'00			2035 Feb 15 19:35	30° $\Re$ $\Theta$	
evening set	2029 Apr 17 03:24	12° $\Xi$ 15'58		direct	2035 Mar 30 13:12	28° $\Theta$ 25'29	
					2035 May 11 20:44	0° $\Omega$	
conjunction	2029 May 04 16:57	14° $\Xi$ 30'30	-2°-5'-50	evening set	2035 Jul 14 04:54	6° $\Omega$ 37'16	
minimum elong	2029 May 04 16:59	14° $\Xi$ 30'31	2°05'51				
max. Earth dist.	2029 May 04 19:16	14° $\Xi$ 31'15	10.18241 AU	conjunction	2035 Aug 01 08:03	8° $\Omega$ 56'28	0°34'42
	2029 May 08 12:45	15° $\Xi$		minimum elong	2035 Aug 01 08:01	8° $\Omega$ 56'28	0°34'43
morning rise	2029 May 22 10:35	16° $\Xi$ 46'23		max. Earth dist.	2035 Aug 01 14:29	8° $\Omega$ 58'32	10.12283 AU
retrograde	2029 Sep 06 08:34	25° $\Xi$ 01'09		morning rise	2035 Aug 19 08:53	11° $\Omega$ 14'57	
opposition	2029 Nov 13 15:00	21° $\Xi$ 31'22	-2°-28'-18		2035 Sep 20 04:01	15° $\Omega$	
min. Earth dist.	2029 Nov 13 12:32	21° $\Xi$ 31'52	8.14441 AU	retrograde	2035 Nov 30 11:07	19° $\Omega$ 14'59	
direct	2030 Jan 19 03:54	18° $\Xi$ 05'25		opposition	2036 Feb 05 01:31	15° $\Omega$ 48'41	1°02'11
evening set	2030 May 01 12:09	26° $\Xi$ 03'38		min. Earth dist.	2036 Feb 04 20:14	15° $\Omega$ 49'46	8.15939 AU
					2036 Feb 15 02:10	15° $\Re$ $\Omega$	
conjunction	2030 May 19 06:22	28° $\Xi$ 20'36	-1°-50'-47	direct	2036 Apr 12 22:36	12° $\Omega$ 19'26	
minimum elong	2030 May 19 06:25	28° $\Xi$ 20'37	1°50'48		2036 Jun 08 09:19	15° $\Omega$	
max. Earth dist.	2030 May 19 09:43	28° $\Xi$ 21'41	10.10901 AU	evening set	2036 Jul 27 23:40	20° $\Omega$ 28'12	
	2030 Jun 01 02:34	0° $\Pi$					
morning rise	2030 Jun 06 04:09	0° $\Pi$ 38'44		conjunction	2036 Aug 14 23:52	22° $\Omega$ 45'21	1°04'42
retrograde	2030 Sep 20 21:29	8° $\Pi$ 56'47		minimum elong	2036 Aug 14 23:49	22° $\Omega$ 45'20	1°04'43
opposition	2030 Nov 27 15:55	5° $\Pi$ 26'42	-2°-5'-24	max. Earth dist.	2036 Aug 15 06:12	22° $\Omega$ 47'22	10.20105 AU
min. Earth dist.	2030 Nov 27 12:43	5° $\Pi$ 27'21	8.08153 AU	morning rise	2036 Sep 01 20:39	25° $\Omega$ 01'27	
direct	2031 Feb 02 02:24	1° $\Pi$ 59'37			2036 Oct 16 07:34	0° $\P$	
evening set	2031 May 16 04:26	10° $\Pi$ 03'59		retrograde	2036 Dec 13 02:58	2° $\P$ 53'16	
					2037 Feb 11 06:46	30° $\Re$ $\Omega$	
conjunction	2031 Jun 03 02:58	12° $\Pi$ 22'58	-1°-29'-1	opposition	2037 Feb 17 19:27	29° $\Omega$ 28'24	1°36'57
minimum elong	2031 Jun 03 03:02	12° $\Pi$ 22'59	1°29'02	min. Earth dist.	2037 Feb 17 14:50	29° $\Omega$ 29'20	8.24715 AU
max. Earth dist.	2031 Jun 03 06:53	12° $\Pi$ 24'14	10.05826 AU	direct	2037 Apr 27 04:57	25° $\Omega$ 59'36	
morning rise	2031 Jun 21 04:19	14° $\Pi$ 42'50			2037 Jul 07 02:30	0° $\P$	
retrograde	2031 Oct 05 10:50	23° $\Pi$ 01'40		evening set	2037 Aug 11 11:08	4° $\P$ 03'37	
opposition	2031 Dec 11 19:00	19° $\Pi$ 31'40	-1°-34'-42				
min. Earth dist.	2031 Dec 11 15:33	19° $\Pi$ 32'23	8.04307 AU	conjunction	2037 Aug 29 07:12	6° $\P$ 18'11	1°30'34
direct	2032 Feb 16 06:59	16° $\Pi$ 03'36		minimum elong	2037 Aug 29 07:08	6° $\P$ 18'10	1°30'35
evening set	2032 May 30 02:22	24° $\Pi$ 12'40		max. Earth dist.	2037 Aug 29 12:34	6° $\P$ 19'53	10.29657 AU
				morning rise	2037 Sep 15 23:09	8° $\P$ 31'28	
conjunction	2032 Jun 17 04:23	26° $\Pi$ 33'00	-1°-1'-43	retrograde	2037 Dec 26 11:35	16° $\P$ 14'39	
minimum elong	2032 Jun 17 04:25	26° $\Pi$ 33'01	1°01'44	opposition	2038 Mar 03 08:33	12° $\P$ 51'13	2°05'37
max. Earth dist.	2032 Jun 17 08:52	26° $\Pi$ 34'28	10.03344 AU	min. Earth dist.	2038 Mar 03 04:59	12° $\P$ 51'56	8.34959 AU
morning rise	2032 Jul 05 08:07	28° $\Pi$ 53'53		direct	2038 May 11 06:22	9° $\P$ 23'07	
	2032 Jul 14 02:16	0° $\Theta$		evening set	2038 Aug 25 13:24	17° $\P$ 20'56	
retrograde	2032 Oct 18 22:26	7° $\Theta$ 11'00					
opposition	2032 Dec 24 22:55	3° $\Theta$ 41'30	0°-58'-2	conjunction	2038 Sep 12 04:43	19° $\P$ 32'38	1°51'04



minimum elong	2038 Sep 12 04:39	19° $\overline{\text{m}}$ 32'37	1°51'04	evening set	2044 Nov 07 16:53	0° $\overline{\text{z}}$ 49'26	
max. Earth dist.	2038 Sep 12 08:30	19° $\overline{\text{m}}$ 33'49	10.40370 AU				
morning rise	2038 Sep 29 15:37	21° $\overline{\text{m}}$ 42'56		conjunction	2044 Nov 24 10:45	2° $\overline{\text{z}}$ 48'05	1°45'46
retrograde	2039 Jan 08 11:55	29° $\overline{\text{m}}$ 17'27		minimum elong	2044 Nov 24 10:47	2° $\overline{\text{z}}$ 48'05	1°45'46
opposition	2039 Mar 16 16:12	25° $\overline{\text{m}}$ 55'25	2°26'59	max. Earth dist.	2044 Nov 24 06:12	2° $\overline{\text{z}}$ 46'43	10.96274 AU
min. Earth dist.	2039 Mar 16 13:47	25° $\overline{\text{m}}$ 55'53	8.46053 AU	morning rise	2044 Dec 11 01:59	4° $\overline{\text{z}}$ 45'57	
direct	2039 May 25 03:05	22° $\overline{\text{m}}$ 28'12		retrograde	2045 Mar 20 18:12	11° $\overline{\text{z}}$ 47'04	
	2039 Sep 05 15:14	0° $\underline{\text{a}}$		opposition	2045 May 29 10:58	8° $\overline{\text{z}}$ 29'39	1°58'26
evening set	2039 Sep 08 05:42	0° $\underline{\text{a}}$ 18'52		min. Earth dist.	2045 May 29 14:28	8° $\overline{\text{z}}$ 29'00	8.98720 AU
				direct	2045 Aug 08 15:00	5° $\overline{\text{z}}$ 08'53	
conjunction	2039 Sep 25 16:08	2° $\underline{\text{a}}$ 27'38	2°05'26	evening set	2045 Nov 19 07:50	12° $\overline{\text{z}}$ 18'48	
minimum elong	2039 Sep 25 16:05	2° $\underline{\text{a}}$ 27'37	2°05'26				
max. Earth dist.	2039 Sep 25 18:01	2° $\underline{\text{a}}$ 28'13	10.51607 AU	conjunction	2045 Dec 06 00:29	14° $\overline{\text{z}}$ 16'36	1°26'50
morning rise	2039 Oct 12 22:04	4° $\underline{\text{a}}$ 34'59		minimum elong	2045 Dec 06 00:31	14° $\overline{\text{z}}$ 16'36	1°26'51
retrograde	2040 Jan 21 04:12	12° $\underline{\text{a}}$ 01'17		max. Earth dist.	2045 Dec 05 20:06	14° $\overline{\text{z}}$ 15'18	11.00495 AU
opposition	2040 Mar 28 18:15	8° $\underline{\text{a}}$ 40'29	2°40'29	morning rise	2045 Dec 22 15:00	16° $\overline{\text{z}}$ 13'50	
min. Earth dist.	2040 Mar 28 16:34	8° $\underline{\text{a}}$ 40'49	8.57333 AU	retrograde	2046 Apr 01 14:45	23° $\overline{\text{z}}$ 13'49	
direct	2040 Jun 06 17:54	5° $\underline{\text{a}}$ 14'19		opposition	2046 Jun 10 15:21	19° $\overline{\text{z}}$ 56'17	1°33'03
evening set	2040 Sep 20 11:31	12° $\underline{\text{a}}$ 57'18		min. Earth dist.	2046 Jun 10 19:02	19° $\overline{\text{z}}$ 55'36	9.01900 AU
				direct	2046 Aug 20 19:11	16° $\overline{\text{z}}$ 36'14	
conjunction	2040 Oct 07 17:25	15° $\underline{\text{a}}$ 03'19	2°13'24	evening set	2046 Nov 30 19:17	23° $\overline{\text{z}}$ 42'12	
minimum elong	2040 Oct 07 17:24	15° $\underline{\text{a}}$ 03'18	2°13'23				
max. Earth dist.	2040 Oct 07 18:05	15° $\underline{\text{a}}$ 03'31	10.62712 AU	conjunction	2046 Dec 17 11:06	25° $\overline{\text{z}}$ 39'33	1°04'35
morning rise	2040 Oct 24 18:47	17° $\underline{\text{a}}$ 07'57		minimum elong	2046 Dec 17 11:08	25° $\overline{\text{z}}$ 39'33	1°04'35
retrograde	2041 Feb 01 16:00	24° $\underline{\text{a}}$ 26'53		max. Earth dist.	2046 Dec 17 06:21	25° $\overline{\text{z}}$ 38'08	11.02668 AU
opposition	2041 Apr 10 15:12	21° $\underline{\text{a}}$ 07'12	2°46'01	morning rise	2047 Jan 03 01:31	27° $\overline{\text{z}}$ 36'32	
min. Earth dist.	2041 Apr 10 14:24	21° $\underline{\text{a}}$ 07'21	8.68160 AU		2047 Jan 24 15:40	0° $\overline{\text{z}}$	
direct	2041 Jun 20 01:10	17° $\underline{\text{a}}$ 42'11		retrograde	2047 Apr 13 11:46	4° $\overline{\text{z}}$ 36'50	
evening set	2041 Oct 03 07:08	25° $\underline{\text{a}}$ 17'27		opposition	2047 Jun 22 19:08	1° $\overline{\text{z}}$ 18'58	1°04'10
				min. Earth dist.	2047 Jun 22 23:41	1° $\overline{\text{z}}$ 18'08	9.02995 AU
conjunction	2041 Oct 20 09:07	27° $\underline{\text{a}}$ 21'02	2°14'59		2047 Jul 11 02:58	30° $\overline{\text{R}}$ $\overline{\text{z}}$	
minimum elong	2041 Oct 20 09:07	27° $\underline{\text{a}}$ 21'02	2°14'58	direct	2047 Sep 01 18:29	27° $\overline{\text{z}}$ 59'28	
max. Earth dist.	2041 Oct 20 08:50	27° $\underline{\text{a}}$ 20'57	10.73095 AU		2047 Oct 22 11:09	0° $\overline{\text{z}}$	
morning rise	2041 Nov 06 06:35	29° $\underline{\text{a}}$ 23'20		evening set	2047 Dec 12 04:46	5° $\overline{\text{z}}$ 02'46	
	2041 Nov 11 10:57	0° $\overline{\text{m}}$					
retrograde	2042 Feb 13 22:50	6° $\overline{\text{m}}$ 35'58		conjunction	2047 Dec 28 20:02	7° $\overline{\text{z}}$ 00'00	0°39'52
opposition	2042 Apr 23 07:28	3° $\overline{\text{m}}$ 17'14	2°43'55	minimum elong	2047 Dec 28 20:03	7° $\overline{\text{z}}$ 00'00	0°39'51
min. Earth dist.	2042 Apr 23 08:05	3° $\overline{\text{m}}$ 17'07	8.78021 AU	max. Earth dist.	2047 Dec 28 14:17	6° $\overline{\text{z}}$ 58'18	11.02735 AU
	2042 Jun 21 10:26	30° $\overline{\text{R}}$ $\underline{\text{a}}$		morning rise	2048 Jan 14 10:58	8° $\overline{\text{z}}$ 57'09	
direct	2042 Jul 02 23:47	29° $\underline{\text{a}}$ 53'25		retrograde	2048 Apr 24 07:53	15° $\overline{\text{z}}$ 59'18	
	2042 Jul 14 13:59	0° $\overline{\text{m}}$		opposition	2048 Jul 03 23:04	12° $\overline{\text{z}}$ 40'51	0°32'47
evening set	2042 Oct 15 17:55	7° $\overline{\text{m}}$ 21'19		min. Earth dist.	2048 Jul 04 04:08	12° $\overline{\text{z}}$ 39'55	9.01986 AU
				direct	2048 Sep 12 16:55	9° $\overline{\text{z}}$ 21'41	
conjunction	2042 Nov 01 16:31	9° $\overline{\text{m}}$ 22'52	2°10'32	evening set	2048 Dec 22 14:00	16° $\overline{\text{z}}$ 23'48	
minimum elong	2042 Nov 01 16:32	9° $\overline{\text{m}}$ 22'53	2°10'31				
max. Earth dist.	2042 Nov 01 14:48	9° $\overline{\text{m}}$ 22'21	10.82340 AU	conjunction	2049 Jan 08 05:16	18° $\overline{\text{z}}$ 21'16	0°13'33
morning rise	2042 Nov 18 11:01	11° $\overline{\text{m}}$ 23'16		minimum elong	2049 Jan 08 05:16	18° $\overline{\text{z}}$ 21'16	0°13'32
	2042 Dec 21 13:49	15° $\overline{\text{m}}$		behind sun begin	2049 Jan 08 01:16	18° $\overline{\text{z}}$ 20'06	
retrograde	2043 Feb 25 23:40	18° $\overline{\text{m}}$ 30'46		behind sun end	2049 Jan 08 09:16	18° $\overline{\text{z}}$ 22'26	
opposition	2043 May 05 19:38	15° $\overline{\text{m}}$ 12'46	2°34'46	max. Earth dist.	2049 Jan 07 23:22	18° $\overline{\text{z}}$ 19'32	11.00702 AU
min. Earth dist.	2043 May 05 22:06	15° $\overline{\text{m}}$ 12'18	8.86577 AU	morning rise	2049 Jan 24 21:03	20° $\overline{\text{z}}$ 18'54	
	2043 May 08 15:17	15° $\overline{\text{R}}$ $\overline{\text{m}}$		retrograde	2049 May 06 09:11	27° $\overline{\text{z}}$ 24'26	
direct	2043 Jul 15 18:06	11° $\overline{\text{m}}$ 50'04		desc. node	2049 Jul 15 20:31	24° $\overline{\text{z}}$ 06'32	
	2043 Sep 18 09:46	15° $\overline{\text{m}}$		opposition	2049 Jul 16 03:51	24° $\overline{\text{z}}$ 05'11	0°00'-1
evening set	2043 Oct 27 20:50	19° $\overline{\text{m}}$ 11'11		min. Earth dist.	2049 Jul 16 08:30	24° $\overline{\text{z}}$ 04'19	8.98910 AU
				direct	2049 Sep 24 15:34	20° $\overline{\text{z}}$ 46'13	
conjunction	2043 Nov 13 16:39	21° $\overline{\text{m}}$ 11'04	2°00'34	evening set	2050 Jan 03 00:33	27° $\overline{\text{z}}$ 48'32	
minimum elong	2043 Nov 13 16:41	21° $\overline{\text{m}}$ 11'05	2°00'34				
max. Earth dist.	2043 Nov 13 12:54	21° $\overline{\text{m}}$ 09'57	10.90151 AU	conjunction	2050 Jan 19 16:17	29° $\overline{\text{z}}$ 46'37	0°-13'-31
morning rise	2043 Nov 30 09:10	23° $\overline{\text{m}}$ 09'59		minimum elong	2050 Jan 19 16:17	29° $\overline{\text{z}}$ 46'37	0°13'32
	2044 Feb 21 14:20	0° $\overline{\text{z}}$		behind sun begin	2050 Jan 19 12:17	29° $\overline{\text{z}}$ 45'26	
retrograde	2044 Mar 08 22:25	0° $\overline{\text{z}}$ 13'38		behind sun end	2050 Jan 19 20:17	29° $\overline{\text{z}}$ 47'47	
	2044 Mar 25 10:01	30° $\overline{\text{R}}$ $\overline{\text{m}}$		max. Earth dist.	2050 Jan 19 11:26	29° $\overline{\text{z}}$ 45'11	10.96626 AU
opposition	2044 May 17 04:37	26° $\overline{\text{m}}$ 56'04	2°19'19		2050 Jan 21 13:15	0° $\approx$	
min. Earth dist.	2044 May 17 08:01	26° $\overline{\text{m}}$ 55'26	8.93555 AU	morning rise	2050 Feb 05 09:08	1° $\approx$ 45'05	
direct	2044 Jul 27 07:28	23° $\overline{\text{m}}$ 34'24		retrograde	2050 May 18 14:28	8° $\approx$ 55'26	
	2044 Oct 31 12:52	0° $\overline{\text{z}}$		opposition	2050 Jul 28 10:42	5° $\approx$ 35'13	0°-33'-7



min. Earth dist.	2050 Jul 28 14:26	5°≈34'31	8.93853 AU	min. Earth dist.	2056 Oct 11 18:19	19°Υ12'39	8.37394 AU
direct	2050 Oct 06 12:42	2°≈16'17		direct	2056 Dec 17 23:52	15°Υ49'51	
evening set	2051 Jan 14 14:14	9°≈20'20		evening set	2057 Mar 28 20:47	23°Υ29'38	
conjunction	2051 Jan 31 06:36	11°≈19'19	0°-40'-14	conjunction	2057 Apr 15 03:33	25°Υ40'20	-2°-14'-28
minimum elong	2051 Jan 31 06:35	11°≈19'18	0°40'15	minimum elong	2057 Apr 15 03:34	25°Υ40'20	2°14'30
max. Earth dist.	2051 Jan 31 02:02	11°≈17'57	10.90637 AU	max. Earth dist.	2057 Apr 15 04:14	25°Υ40'33	10.32244 AU
morning rise	2051 Feb 17 00:51	13°≈18'55		morning rise	2057 May 02 15:07	27°Υ52'32	
	2051 Mar 03 19:13	15°≈			2057 May 20 06:00	0°♄	
retrograde	2051 May 31 01:16	20°≈35'28		retrograde	2057 Aug 17 11:50	5°♄58'56	
opposition	2051 Aug 09 20:40	17°≈14'10	-1°-5'-20	opposition	2057 Oct 25 10:39	2°♄30'40	-2°-45'-7
min. Earth dist.	2051 Aug 10 00:06	17°≈13'31	8.86996 AU	min. Earth dist.	2057 Oct 25 09:17	2°♄30'56	8.27625 AU
	2051 Sep 11 14:34	15°≈			2057 Nov 29 18:49	30°♄	
direct	2051 Oct 18 11:51	13°≈55'03		direct	2057 Dec 31 06:59	29°Υ06'59	
	2051 Nov 23 11:44	15°≈			2058 Jan 31 09:15	0°♄	
evening set	2052 Jan 26 08:34	21°≈02'16		evening set	2058 Apr 11 17:12	6°♄54'35	
conjunction	2052 Feb 12 01:52	23°≈02'30	-1°-5'-38	conjunction	2058 Apr 29 04:28	9°♄07'52	-2°-9'-45
minimum elong	2052 Feb 12 01:50	23°≈02'29	1°05'39	minimum elong	2058 Apr 29 04:30	9°♄07'53	2°09'46
max. Earth dist.	2052 Feb 11 21:03	23°≈01'02	10.82964 AU	max. Earth dist.	2058 Apr 29 06:21	9°♄08'29	10.23043 AU
morning rise	2052 Feb 28 22:02	25°≈03'35		morning rise	2058 May 16 20:20	11°♄22'36	
	2052 Apr 16 13:54	0°♄			2058 Jun 16 14:27	15°♄	
retrograde	2052 Jun 11 17:22	2°♄27'30		retrograde	2058 Aug 31 19:37	19°♄35'00	
	2052 Aug 09 03:34	30°♄		opposition	2058 Nov 08 06:37	16°♄06'04	-2°-34'-54
opposition	2052 Aug 21 10:31	29°≈05'00	-1°-35'-21	min. Earth dist.	2058 Nov 08 04:34	16°♄06'29	8.19111 AU
min. Earth dist.	2052 Aug 21 13:57	29°≈04'21	8.78608 AU		2058 Nov 22 02:59	15°♄	
direct	2052 Oct 29 13:18	25°≈45'29		direct	2059 Jan 13 20:42	12°♄41'14	
	2053 Jan 11 02:51	0°♄			2059 Mar 05 22:56	15°♄	
evening set	2053 Feb 06 08:50	2°♄57'17		evening set	2059 Apr 25 22:20	20°♄36'05	
conjunction	2053 Feb 23 03:40	4°♄59'02	-1°-28'-38	conjunction	2059 May 13 14:27	22°♄51'52	-1°-57'-40
minimum elong	2053 Feb 23 03:38	4°♄59'02	1°28'39	minimum elong	2059 May 13 14:30	22°♄51'53	1°57'41
max. Earth dist.	2053 Feb 22 23:30	4°♄57'46	10.73906 AU	max. Earth dist.	2059 May 13 17:42	22°♄52'55	10.15338 AU
morning rise	2053 Mar 12 02:04	7°♄01'53		morning rise	2059 May 31 10:33	25°♄08'56	
retrograde	2053 Jun 24 15:27	14°♄34'09			2059 Jul 12 19:57	0°♄	
opposition	2053 Sep 03 04:52	11°♄10'21	-2°-1'-51	retrograde	2059 Sep 15 06:27	3°♄25'18	
min. Earth dist.	2053 Sep 03 07:40	11°♄09'49	8.69015 AU		2059 Nov 21 10:19	30°♄	
direct	2053 Nov 10 20:12	7°♄50'17		opposition	2059 Nov 22 06:09	29°♄55'57	-2°-15'-35
evening set	2054 Feb 18 16:29	15°♄07'53		min. Earth dist.	2059 Nov 22 03:21	29°♄56'32	8.12273 AU
				direct	2060 Jan 27 17:50	26°♄29'59	
conjunction	2054 Mar 07 13:26	17°♄11'31	-1°-48'-6		2060 Mar 31 11:49	0°♄	
minimum elong	2054 Mar 07 13:23	17°♄11'30	1°48'07	evening set	2060 May 09 11:32	4°♄31'16	
max. Earth dist.	2054 Mar 07 10:56	17°♄10'44	10.63822 AU				
morning rise	2054 Mar 24 14:17	19°♄16'23		conjunction	2060 May 27 08:20	6°♄49'14	-1°-38'-34
retrograde	2054 Jul 07 22:04	26°♄57'33		minimum elong	2060 May 27 08:23	6°♄49'15	1°38'35
opposition	2054 Sep 16 04:10	23°♄32'29	-2°-23'-23	max. Earth dist.	2060 May 27 12:40	6°♄50'38	10.09495 AU
min. Earth dist.	2054 Sep 16 05:31	23°♄32'13	8.58620 AU	morning rise	2060 Jun 14 08:10	9°♄08'13	
direct	2054 Nov 23 08:06	20°♄11'43		retrograde	2060 Sep 28 18:54	17°♄26'18	
evening set	2055 Mar 03 08:33	27°♄36'05		opposition	2060 Dec 05 08:04	13°♄56'54	-1°-47'-57
				min. Earth dist.	2060 Dec 05 04:28	13°♄57'39	8.07449 AU
conjunction	2055 Mar 20 08:10	29°♄41'52	-2°-2'-54	direct	2061 Feb 09 19:57	10°♄29'54	
minimum elong	2055 Mar 20 08:08	29°♄41'52	2°02'56	evening set	2061 May 24 07:08	18°♄36'30	
max. Earth dist.	2055 Mar 20 07:17	29°♄41'35	10.53170 AU				
	2055 Mar 22 18:29	0°Υ		conjunction	2061 Jun 11 07:51	20°♄56'09	-1°-13'-24
morning rise	2055 Apr 06 12:00	1°Υ49'01		minimum elong	2061 Jun 11 07:54	20°♄56'10	1°13'25
retrograde	2055 Jul 21 12:49	9°Υ39'14		max. Earth dist.	2061 Jun 11 12:53	20°♄57'47	10.05847 AU
opposition	2055 Sep 29 09:01	6°Υ12'56	-2°-38'-34	morning rise	2061 Jun 29 10:29	23°♄16'27	
min. Earth dist.	2055 Sep 29 08:54	6°Υ12'58	8.47906 AU		2061 Sep 01 07:38	0°♄	
direct	2055 Dec 06 00:05	2°Υ51'20		retrograde	2061 Oct 13 07:45	1°♄33'59	
evening set	2056 Mar 15 09:48	10°Υ23'13			2061 Nov 24 19:03	30°♄	
				opposition	2061 Dec 19 11:34	28°♄04'52	-1°-13'-32
conjunction	2056 Apr 01 12:40	12°Υ31'22	-2°-12'00	min. Earth dist.	2061 Dec 19 07:24	28°♄05'43	8.04996 AU
minimum elong	2056 Apr 01 12:40	12°Υ31'22	2°12'01	direct	2062 Feb 24 01:54	24°♄36'59	
max. Earth dist.	2056 Apr 01 12:43	12°Υ31'23	10.42465 AU		2062 May 16 10:49	0°♄	
morning rise	2056 Apr 18 20:09	14°Υ40'59		evening set	2062 Jun 08 06:55	2°♄47'18	
retrograde	2056 Aug 03 09:25	22°Υ39'50					
opposition	2056 Oct 11 19:19	19°Υ12'27	-2°-46'-9	conjunction	2062 Jun 26 10:17	5°♄07'52	0°-43'-41



minimum elong	2062 Jun 26 10:19	5° $\mathring{U}$ 07'53	0°43'42	max. Earth dist.	2068 Sep 19 13:40	27° $\mathring{M}$ 20'47	10.46298 AU
max. Earth dist.	2062 Jun 26 15:42	5° $\mathring{U}$ 09'38	10.04735 AU	morning rise	2068 Oct 06 18:28	29° $\mathring{M}$ 28'24	
morning rise	2062 Jul 14 14:23	7° $\mathring{U}$ 28'41			2068 Oct 11 02:55	0° $\mathring{U}$	
retrograde	2062 Oct 27 18:57	15° $\mathring{U}$ 43'20		retrograde	2069 Jan 15 05:59	6° $\mathring{U}$ 57'57	
opposition	2063 Jan 02 15:07	12° $\mathring{U}$ 14'47	0°-34'-34	opposition	2069 Mar 23 15:47	3° $\mathring{U}$ 36'10	2°35'53
min. Earth dist.	2063 Jan 02 10:51	12° $\mathring{U}$ 15'40	8.05199 AU	min. Earth dist.	2069 Mar 23 13:51	3° $\mathring{U}$ 36'33	8.51920 AU
direct	2063 Mar 10 10:19	8° $\mathring{U}$ 46'11		direct	2069 Jun 01 10:29	0° $\mathring{U}$ 09'04	
evening set	2063 Jun 23 08:40	16° $\mathring{U}$ 58'22		evening set	2069 Sep 15 07:38	7° $\mathring{U}$ 55'08	
conjunction	2063 Jul 11 13:05	19° $\mathring{U}$ 18'58	0°-11'-21	conjunction	2069 Oct 02 15:33	10° $\mathring{U}$ 02'19	2°10'53
minimum elong	2063 Jul 11 13:06	19° $\mathring{U}$ 18'58	0°11'23	minimum elong	2069 Oct 02 15:31	10° $\mathring{U}$ 02'19	2°10'53
behind sun begin	2063 Jul 11 07:50	19° $\mathring{U}$ 17'17		max. Earth dist.	2069 Oct 02 17:18	10° $\mathring{U}$ 02'52	10.57334 AU
behind sun end	2063 Jul 11 18:22	19° $\mathring{U}$ 20'40		morning rise	2069 Oct 19 18:44	12° $\mathring{U}$ 08'06	
max. Earth dist.	2063 Jul 11 18:25	19° $\mathring{U}$ 20'41	10.06324 AU	retrograde	2070 Jan 27 18:59	19° $\mathring{U}$ 29'54	
morning rise	2063 Jul 29 17:02	21° $\mathring{U}$ 39'24		opposition	2070 Apr 05 14:26	16° $\mathring{U}$ 09'16	2°44'45
retrograde	2063 Nov 11 02:16	29° $\mathring{U}$ 48'58		min. Earth dist.	2070 Apr 05 13:53	16° $\mathring{U}$ 09'22	8.62925 AU
asc. node	2063 Nov 19 04:08	29° $\mathring{U}$ 45'16		direct	2070 Jun 14 20:00	12° $\mathring{U}$ 43'13	
opposition	2064 Jan 16 17:07	26° $\mathring{U}$ 21'16	0°06'20	evening set	2070 Sep 28 07:10	20° $\mathring{U}$ 21'33	
min. Earth dist.	2064 Jan 16 13:09	26° $\mathring{U}$ 22'05	8.08109 AU	conjunction	2070 Oct 15 10:43	22° $\mathring{U}$ 26'09	2°15'08
direct	2064 Mar 23 21:32	22° $\mathring{U}$ 52'11		minimum elong	2070 Oct 15 10:43	22° $\mathring{U}$ 26'09	2°15'08
	2064 Jun 28 19:26	0° $\mathring{Q}$		max. Earth dist.	2070 Oct 15 10:34	22° $\mathring{U}$ 26'06	10.68124 AU
evening set	2064 Jul 07 09:21	1° $\mathring{Q}$ 04'13		morning rise	2070 Nov 01 09:54	24° $\mathring{U}$ 29'25	
conjunction	2064 Jul 25 13:05	3° $\mathring{Q}$ 23'55	0°21'30		2070 Dec 25 20:45	0° $\mathring{M}$	
minimum elong	2064 Jul 25 13:03	3° $\mathring{Q}$ 23'55	0°21'31	retrograde	2071 Feb 09 01:58	1° $\mathring{M}$ 44'19	
max. Earth dist.	2064 Jul 25 17:52	3° $\mathring{Q}$ 25'28	10.10542 AU		2071 Mar 27 18:15	30° $\mathring{R}$ $\mathring{U}$	
morning rise	2064 Aug 12 15:10	5° $\mathring{Q}$ 43'04		opposition	2071 Apr 18 08:04	28° $\mathring{U}$ 24'43	2°45'49
retrograde	2064 Nov 24 02:32	13° $\mathring{Q}$ 45'53		min. Earth dist.	2071 Apr 18 08:18	28° $\mathring{U}$ 24'40	8.73413 AU
opposition	2065 Jan 29 16:27	10° $\mathring{Q}$ 19'15	0°46'26	direct	2071 Jun 27 22:34	24° $\mathring{U}$ 59'52	
min. Earth dist.	2065 Jan 29 12:50	10° $\mathring{Q}$ 19'59	8.13552 AU		2071 Sep 18 17:21	0° $\mathring{M}$	
direct	2065 Apr 07 08:45	6° $\mathring{Q}$ 49'59		evening set	2071 Oct 10 21:06	2° $\mathring{M}$ 30'33	
evening set	2065 Jul 22 05:55	14° $\mathring{Q}$ 59'49		conjunction	2071 Oct 27 21:00	4° $\mathring{M}$ 32'53	2°13'12
	2065 Jul 22 06:30	15° $\mathring{Q}$		minimum elong	2071 Oct 27 21:00	4° $\mathring{M}$ 32'53	2°13'11
conjunction	2065 Aug 09 07:19	17° $\mathring{Q}$ 17'47	0°52'42	max. Earth dist.	2071 Oct 27 19:47	4° $\mathring{M}$ 32'31	10.78173 AU
minimum elong	2065 Aug 09 07:16	17° $\mathring{Q}$ 17'46	0°52'42	morning rise	2071 Nov 13 16:51	6° $\mathring{M}$ 34'01	
max. Earth dist.	2065 Aug 09 11:33	17° $\mathring{Q}$ 19'09	10.17115 AU	retrograde	2072 Feb 21 04:06	13° $\mathring{M}$ 43'08	
morning rise	2065 Aug 27 06:01	19° $\mathring{Q}$ 34'52		opposition	2072 Apr 29 21:14	10° $\mathring{M}$ 24'23	2°39'34
retrograde	2065 Dec 07 19:32	27° $\mathring{Q}$ 29'52		min. Earth dist.	2072 Apr 29 21:41	10° $\mathring{M}$ 24'18	8.82922 AU
opposition	2066 Feb 12 11:50	24° $\mathring{Q}$ 04'23	1°23'11	direct	2072 Jul 09 19:45	7° $\mathring{M}$ 00'48	
min. Earth dist.	2066 Feb 12 08:10	24° $\mathring{Q}$ 05'08	8.21172 AU	evening set	2072 Oct 22 02:27	14° $\mathring{M}$ 24'15	
direct	2066 Apr 21 17:22	20° $\mathring{Q}$ 35'16			2072 Oct 27 03:47	15° $\mathring{M}$	
evening set	2066 Aug 05 20:04	28° $\mathring{Q}$ 41'04		conjunction	2072 Nov 07 23:29	16° $\mathring{M}$ 24'42	2°05'31
	2066 Aug 16 07:24	0° $\mathring{M}$		minimum elong	2072 Nov 07 23:30	16° $\mathring{M}$ 24'43	2°05'31
conjunction	2066 Aug 23 17:54	0° $\mathring{M}$ 56'41	1°20'25	max. Earth dist.	2072 Nov 07 22:07	16° $\mathring{M}$ 24'18	10.87059 AU
minimum elong	2066 Aug 23 17:51	0° $\mathring{M}$ 56'40	1°20'26	morning rise	2072 Nov 24 16:45	18° $\mathring{M}$ 24'07	
max. Earth dist.	2066 Aug 23 21:51	0° $\mathring{M}$ 57'56	10.25625 AU	retrograde	2073 Mar 04 04:30	25° $\mathring{M}$ 28'41	
morning rise	2066 Sep 10 12:08	3° $\mathring{M}$ 11'09		opposition	2073 May 12 06:45	22° $\mathring{M}$ 10'38	2°26'42
retrograde	2066 Dec 21 05:56	10° $\mathring{M}$ 57'40		min. Earth dist.	2073 May 12 07:50	22° $\mathring{M}$ 10'25	8.91070 AU
opposition	2067 Feb 26 02:18	7° $\mathring{M}$ 33'25	1°54'33	direct	2073 Jul 22 09:20	18° $\mathring{M}$ 48'18	
min. Earth dist.	2067 Feb 25 22:42	7° $\mathring{M}$ 34'08	8.30484 AU	evening set	2073 Nov 03 00:28	26° $\mathring{M}$ 05'09	
direct	2067 May 05 20:42	4° $\mathring{M}$ 04'43		conjunction	2073 Nov 19 19:16	28° $\mathring{M}$ 04'10	1°52'43
evening set	2067 Aug 20 01:49	12° $\mathring{M}$ 04'57		minimum elong	2073 Nov 19 19:19	28° $\mathring{M}$ 04'11	1°52'43
conjunction	2067 Sep 06 19:19	14° $\mathring{M}$ 17'51	1°43'15	max. Earth dist.	2073 Nov 19 17:14	28° $\mathring{M}$ 03'34	10.94423 AU
minimum elong	2067 Sep 06 19:16	14° $\mathring{M}$ 17'50	1°43'16	morning rise	2073 Dec 06 10:51	0° $\mathring{X}$ 02'19	
max. Earth dist.	2067 Sep 06 22:58	14° $\mathring{M}$ 19'00	10.35544 AU		2073 Dec 06 02:55	0° $\mathring{X}$	
morning rise	2067 Sep 24 08:27	16° $\mathring{M}$ 29'24		retrograde	2074 Mar 16 00:56	7° $\mathring{X}$ 03'37	
retrograde	2068 Jan 03 10:20	24° $\mathring{M}$ 07'18		opposition	2074 May 24 13:20	3° $\mathring{X}$ 46'04	2°08'03
opposition	2068 Mar 10 11:44	20° $\mathring{M}$ 44'18	2°19'03	min. Earth dist.	2074 May 24 15:47	3° $\mathring{X}$ 45'36	8.97543 AU
min. Earth dist.	2068 Mar 10 08:36	20° $\mathring{M}$ 44'55	8.40924 AU	direct	2074 Aug 03 16:31	0° $\mathring{X}$ 24'52	
direct	2068 May 18 18:16	17° $\mathring{M}$ 16'17		evening set	2074 Nov 14 16:56	7° $\mathring{X}$ 36'09	
evening set	2068 Sep 01 21:52	25° $\mathring{M}$ 09'48		conjunction	2074 Dec 01 09:59	9° $\mathring{X}$ 34'06	1°35'29
conjunction	2068 Sep 19 10:33	27° $\mathring{M}$ 19'49	2°00'14	minimum elong	2074 Dec 01 10:01	9° $\mathring{X}$ 34'07	1°35'29
minimum elong	2068 Sep 19 10:30	27° $\mathring{M}$ 19'48	2°00'14	max. Earth dist.	2074 Dec 01 06:23	9° $\mathring{X}$ 33'02	10.99988 AU



morning rise	2074 Dec 18 00:43	11°♂31'24		conjunction	2081 Feb 06 04:54	18°♂03'48	0°-54'-33
retrograde	2075 Mar 27 19:44	18°♂30'52		minimum elong	2081 Feb 06 04:52	18°♂03'47	0°54'32
opposition	2075 Jun 05 17:46	15°♂13'34	1°44'31	max. Earth dist.	2081 Feb 05 23:47	18°♂02'16	10.89165 AU
min. Earth dist.	2075 Jun 05 21:18	15°♂12'55	9.02103 AU	morning rise	2081 Feb 22 23:59	20°♂03'53	
direct	2075 Aug 15 21:59	11°♂53'22		retrograde	2081 Jun 06 10:27	27°♂23'25	
evening set	2075 Nov 26 05:10	19°♂00'11		opposition	2081 Aug 16 04:38	24°♂02'09	-1°-22'-14
				min. Earth dist.	2081 Aug 16 08:38	24°♂01'24	8.84948 AU
conjunction	2075 Dec 12 21:06	20°♂57'28	1°14'36	direct	2081 Oct 24 13:43	20°♂43'27	
minimum elong	2075 Dec 12 21:09	20°♂57'28	1°14'36	evening set	2082 Feb 01 09:09	27°♂52'13	
max. Earth dist.	2075 Dec 12 16:37	20°♂56'08	11.03560 AU				
morning rise	2075 Dec 29 11:34	22°♂54'19		conjunction	2082 Feb 18 03:13	29°♂53'01	-1°-18'-41
retrograde	2076 Apr 07 15:15	29°♂53'27		minimum elong	2082 Feb 18 03:11	29°♂53'00	1°18'42
opposition	2076 Jun 16 21:08	26°♂36'06	1°17'04	max. Earth dist.	2082 Feb 17 22:31	29°♂51'35	10.80319 AU
min. Earth dist.	2076 Jun 17 00:36	26°♂35'28	9.04595 AU		2082 Feb 19 02:20	0°♂	
direct	2076 Aug 26 23:04	23°♂16'45		morning rise	2082 Mar 07 00:15	1°♂54'45	
	2076 Dec 03 16:02	0°♂		retrograde	2082 Jun 19 05:48	9°♂22'21	
evening set	2076 Dec 06 14:39	0°♂20'17		opposition	2082 Aug 28 20:21	5°♂59'42	-1°-50'-25
				min. Earth dist.	2082 Aug 28 23:43	5°♂59'04	8.75404 AU
conjunction	2076 Dec 23 06:07	2°♂17'17	0°50'53	direct	2082 Nov 05 17:16	2°♂40'25	
minimum elong	2076 Dec 23 06:09	2°♂17'17	0°50'53	evening set	2083 Feb 13 12:53	9°♂54'33	
max. Earth dist.	2076 Dec 23 02:08	2°♂16'06	11.05006 AU				
morning rise	2077 Jan 08 20:41	4°♂14'05		conjunction	2083 Mar 02 08:37	11°♂57'06	-1°-39'-50
retrograde	2077 Apr 19 12:13	11°♂14'24		minimum elong	2083 Mar 02 08:35	11°♂57'05	1°39'51
opposition	2077 Jun 29 00:13	7°♂56'44	0°46'42	max. Earth dist.	2083 Mar 02 03:46	11°♂55'36	10.70148 AU
min. Earth dist.	2077 Jun 29 03:31	7°♂56'07	9.04924 AU	morning rise	2083 Mar 19 08:08	14°♂00'48	
direct	2077 Sep 07 21:28	4°♂38'01		retrograde	2083 Jul 02 08:41	21°♂37'13	
evening set	2077 Dec 17 23:26	11°♂39'38		opposition	2083 Sep 10 17:07	18°♂13'07	-2°-14'-19
				min. Earth dist.	2083 Sep 10 20:19	18°♂12'30	8.64774 AU
conjunction	2078 Jan 03 14:43	13°♂36'43	0°25'12	direct	2083 Nov 18 01:48	14°♂52'59	
minimum elong	2078 Jan 03 14:44	13°♂36'43	0°25'11	evening set	2084 Feb 26 00:35	22°♂13'35	
max. Earth dist.	2078 Jan 03 10:28	13°♂35'28	11.04261 AU				
morning rise	2078 Jan 20 05:50	15°♂33'49		conjunction	2084 Mar 13 22:40	24°♂18'11	-1°-56'-51
retrograde	2078 May 01 12:14	22°♂36'43		minimum elong	2084 Mar 13 22:37	24°♂18'11	1°56'53
opposition	2078 Jul 11 03:53	19°♂18'32	0°14'28	max. Earth dist.	2084 Mar 13 18:28	24°♂16'54	10.59134 AU
min. Earth dist.	2078 Jul 11 07:47	19°♂17'49	9.03066 AU	morning rise	2084 Mar 31 01:07	26°♂24'08	
direct	2078 Sep 19 18:02	16°♂00'11			2084 May 01 21:25	0°♂	
desc. node	2078 Dec 23 21:07	22°♂23'29		retrograde	2084 Jul 14 18:15	4°♂09'41	
evening set	2078 Dec 29 08:58	23°♂01'21		opposition	2084 Sep 22 19:01	0°♂44'08	-2°-32'-32
				min. Earth dist.	2084 Sep 22 21:42	0°♂43'36	8.53559 AU
conjunction	2079 Jan 15 00:16	24°♂58'50	0°-1'-37		2084 Oct 02 07:50	30°♂	
minimum elong	2079 Jan 15 00:15	24°♂58'49	0°01'39	direct	2084 Nov 29 15:29	27°♂22'56	
behind sun begin	2079 Jan 14 17:16	24°♂56'47			2085 Jan 24 04:56	0°♂	
behind sun end	2079 Jan 15 07:14	25°♂00'52		evening set	2085 Mar 09 21:05	4°♂50'56	
max. Earth dist.	2079 Jan 14 18:50	24°♂57'15	11.01330 AU				
morning rise	2079 Jan 31 16:28	26°♂56'36		conjunction	2085 Mar 26 22:17	6°♂57'52	-2°-8'-39
	2079 Feb 28 17:24	0°♂		minimum elong	2085 Mar 26 22:16	6°♂57'52	2°08'41
retrograde	2079 May 13 13:29	4°♂03'36		max. Earth dist.	2085 Mar 26 19:43	6°♂57'04	10.47788 AU
opposition	2079 Jul 23 09:23	0°♂44'36	0°-18'-32	morning rise	2085 Apr 13 04:04	9°♂06'15	
min. Earth dist.	2079 Jul 23 14:08	0°♂43'43	8.99050 AU	retrograde	2085 Jul 28 09:57	17°♂00'51	
	2079 Aug 02 12:24	30°♂		opposition	2085 Oct 06 02:23	13°♂33'53	-2°-43'-44
direct	2079 Oct 01 14:32	27°♂26'22		min. Earth dist.	2085 Oct 06 03:51	13°♂33'36	8.42277 AU
	2079 Nov 27 14:19	0°♂		direct	2085 Dec 12 13:20	10°♂11'33	
evening set	2080 Jan 09 20:34	4°♂28'33		evening set	2086 Mar 23 02:59	17°♂47'28	
conjunction	2080 Jan 26 12:20	6°♂26'46	0°-28'-30	conjunction	2086 Apr 09 07:57	19°♂56'57	-2°-14'-14
minimum elong	2080 Jan 26 12:19	6°♂26'46	0°28'30	minimum elong	2086 Apr 09 07:57	19°♂56'57	2°14'15
max. Earth dist.	2080 Jan 26 06:38	6°♂25'05	10.96262 AU	max. Earth dist.	2086 Apr 09 07:28	19°♂56'48	10.36652 AU
morning rise	2080 Feb 12 05:53	8°♂25'32		morning rise	2086 Apr 26 17:27	22°♂07'55	
	2080 Apr 26 20:00	15°♂			2086 Jul 27 23:35	0°♂	
retrograde	2080 May 24 20:34	15°♂38'08		retrograde	2086 Aug 11 09:38	0°♂10'53	
	2080 Jun 22 07:31	15°♂			2086 Aug 25 21:37	30°♂	
opposition	2080 Aug 03 17:23	12°♂18'05	0°-51'-11	opposition	2086 Oct 19 15:05	26°♂42'41	-2°-46'-45
min. Earth dist.	2080 Aug 03 22:03	12°♂17'13	8.92949 AU	min. Earth dist.	2086 Oct 19 14:48	26°♂42'44	8.31483 AU
direct	2080 Oct 12 14:08	8°♂59'44		direct	2086 Dec 25 16:43	23°♂19'08	
	2081 Jan 11 04:58	15°♂			2087 Mar 28 05:49	0°♂	
evening set	2081 Jan 20 12:08	16°♂04'27		evening set	2087 Apr 05 18:38	1°♂03'07	



conjunction	2087 Apr 23 03:54	3°♄15'17	-2°-12'-51	behind sun end	2093 Jul 19 11:05	27°♄20'36	
minimum elong	2087 Apr 23 03:56	3°♄15'17	2°12'53	max. Earth dist.	2093 Jul 19 10:47	27°♄20'30	10.07056 AU
max. Earth dist.	2087 Apr 23 04:52	3°♄15'35	10.26309 AU	morning rise	2093 Aug 06 07:25	29°♄38'24	
morning rise	2087 May 10 17:37	5°♄28'54			2093 Aug 09 03:50	0°♄	
retrograde	2087 Aug 25 16:02	13°♄38'56		retrograde	2093 Nov 18 04:12	7°♄45'02	
opposition	2087 Nov 02 08:47	10°♄09'45	-2°-40'-48	opposition	2094 Jan 23 19:16	4°♄17'30	0°28'31
min. Earth dist.	2087 Nov 02 07:15	10°♄10'04	8.21749 AU	min. Earth dist.	2094 Jan 23 13:49	4°♄18'37	8.09671 AU
direct	2088 Jan 08 01:45	6°♄44'56		direct	2094 Apr 01 06:12	0°♄48'02	
evening set	2088 Apr 18 19:43	14°♄36'46		evening set	2094 Jul 15 22:48	8°♄59'33	
	2088 Apr 21 21:16	15°♄					
conjunction	2088 May 06 09:40	16°♄51'34	-2°-4'-8	conjunction	2094 Aug 03 01:41	11°♄18'34	0°38'53
minimum elong	2088 May 06 09:43	16°♄51'34	2°04'09	minimum elong	2094 Aug 03 01:39	11°♄18'34	0°38'54
max. Earth dist.	2088 May 06 11:36	16°♄52'11	10.17319 AU	max. Earth dist.	2094 Aug 03 08:26	11°♄20'45	10.12907 AU
morning rise	2088 May 24 03:49	19°♄07'43		morning rise	2094 Aug 21 02:04	13°♄36'49	
retrograde	2088 Sep 08 02:31	27°♄22'59			2094 Sep 01 06:50	15°♄	
opposition	2088 Nov 15 06:49	23°♄53'10	-2°-25'-36	retrograde	2094 Dec 02 02:21	21°♄36'05	
min. Earth dist.	2088 Nov 15 04:34	23°♄53'37	8.13615 AU	opposition	2095 Feb 06 16:58	18°♄09'52	1°07'07
direct	2089 Jan 20 19:08	20°♄27'06		min. Earth dist.	2095 Feb 06 11:57	18°♄10'54	8.16669 AU
evening set	2089 May 03 05:29	28°♄26'05			2095 Mar 27 15:20	15°♄♄	
	2089 May 15 10:22	0°♄		direct	2095 Apr 15 15:00	14°♄40'36	
				evening set	2095 May 04 15:21	15°♄	
conjunction	2089 May 21 00:07	0°♄43'17	-1°-48'-8		2095 Jul 30 16:52	22°♄48'57	
minimum elong	2089 May 21 00:10	0°♄43'18	1°48'09	conjunction	2095 Aug 17 16:37	25°♄05'51	1°08'25
max. Earth dist.	2089 May 21 02:49	0°♄44'09	10.10195 AU	minimum elong	2095 Aug 17 16:34	25°♄05'50	1°08'25
morning rise	2089 Jun 07 22:24	3°♄01'39		max. Earth dist.	2095 Aug 17 22:37	25°♄07'46	10.20926 AU
retrograde	2089 Sep 22 14:17	11°♄19'53		morning rise	2095 Sep 04 12:57	27°♄21'40	
opposition	2089 Nov 29 08:02	7°♄49'49	-2°-1'-36		2095 Sep 26 12:44	0°♄	
min. Earth dist.	2089 Nov 29 05:21	7°♄50'22	8.07565 AU	retrograde	2095 Dec 15 17:43	5°♄12'39	
direct	2090 Feb 03 19:22	4°♄22'35		opposition	2096 Feb 20 10:20	1°♄47'54	1°41'09
evening set	2090 May 17 22:26	12°♄27'35		min. Earth dist.	2096 Feb 20 06:16	1°♄48'43	8.25624 AU
					2096 Mar 14 20:18	30°♄♄	
conjunction	2090 Jun 04 21:22	14°♄46'45	-1°-25'-34	direct	2096 Apr 28 20:26	28°♄19'07	
minimum elong	2090 Jun 04 21:25	14°♄46'46	1°25'35		2096 Jun 12 10:20	0°♄	
max. Earth dist.	2090 Jun 05 01:00	14°♄47'55	10.05378 AU	evening set	2096 Aug 13 03:27	6°♄22'35	
morning rise	2090 Jun 22 23:05	17°♄06'46					
retrograde	2090 Oct 07 02:57	25°♄25'32		conjunction	2096 Aug 30 22:57	8°♄36'52	1°33'36
opposition	2090 Dec 13 11:20	21°♄55'34	-1°-30'00	minimum elong	2096 Aug 30 22:54	8°♄36'51	1°33'37
min. Earth dist.	2090 Dec 13 08:02	21°♄56'15	8.03995 AU	max. Earth dist.	2096 Aug 31 03:34	8°♄38'20	10.30629 AU
direct	2091 Feb 18 00:25	18°♄27'22		morning rise	2096 Sep 17 14:28	10°♄49'52	
evening set	2091 Jun 01 20:41	26°♄36'48		retrograde	2096 Dec 28 01:14	18°♄32'11	
				opposition	2097 Mar 04 22:51	15°♄08'53	2°08'53
conjunction	2091 Jun 19 23:02	28°♄57'16	0°-57'-41	min. Earth dist.	2097 Mar 04 19:29	15°♄09'34	8.35995 AU
minimum elong	2091 Jun 19 23:04	28°♄57'17	0°57'41	direct	2097 May 12 22:09	11°♄40'51	
max. Earth dist.	2091 Jun 20 03:50	28°♄58'50	10.03181 AU	evening set	2097 Aug 27 04:38	19°♄38'03	
	2091 Jun 27 23:55	0°♄					
morning rise	2091 Jul 08 02:55	1°♄18'12		conjunction	2097 Sep 13 19:23	21°♄49'26	1°53'18
retrograde	2091 Oct 21 14:47	9°♄35'01		minimum elong	2097 Sep 13 19:20	21°♄49'25	1°53'19
opposition	2091 Dec 27 15:14	6°♄05'32	0°-52'-44	max. Earth dist.	2097 Sep 13 22:48	21°♄50'30	10.41451 AU
min. Earth dist.	2091 Dec 27 11:00	6°♄06'25	8.03138 AU	morning rise	2097 Oct 01 05:50	23°♄59'27	
direct	2092 Mar 03 08:53	2°♄36'37			2097 Nov 29 00:35	0°♄	
evening set	2092 Jun 15 22:07	10°♄48'43		retrograde	2098 Jan 09 23:35	1°♄33'10	
					2098 Feb 21 23:50	30°♄♄	
conjunction	2092 Jul 04 02:23	13°♄09'37	0°-26'-15	opposition	2098 Mar 18 05:56	28°♄11'15	2°29'12
minimum elong	2092 Jul 04 02:24	13°♄09'37	0°26'15	min. Earth dist.	2098 Mar 18 02:59	28°♄11'50	8.47182 AU
max. Earth dist.	2092 Jul 04 08:13	13°♄11'30	10.03747 AU	direct	2098 May 26 19:14	24°♄44'10	
morning rise	2092 Jul 22 06:47	15°♄30'33			2098 Aug 18 17:53	0°♄	
retrograde	2092 Nov 04 00:01	23°♄43'11		evening set	2098 Sep 09 19:46	2°♄34'05	
opposition	2093 Jan 09 18:15	20°♄14'32	0°-12'-19				
min. Earth dist.	2093 Jan 09 13:13	20°♄15'34	8.05064 AU	conjunction	2098 Sep 27 05:47	4°♄42'33	2°06'49
direct	2093 Mar 17 19:30	16°♄45'10		minimum elong	2098 Sep 27 05:45	4°♄42'32	2°06'49
asc. node	2093 May 03 09:02	18°♄39'58		max. Earth dist.	2098 Sep 27 08:13	4°♄43'18	10.52778 AU
evening set	2093 Jun 30 23:48	24°♄58'00		morning rise	2098 Oct 14 11:13	6°♄49'37	
				retrograde	2099 Jan 22 16:49	14°♄15'10	
conjunction	2093 Jul 19 04:15	27°♄18'24	0°06'43	opposition	2099 Mar 31 07:19	10°♄54'30	2°41'36
minimum elong	2093 Jul 19 04:14	27°♄18'24	0°06'43	min. Earth dist.	2099 Mar 31 04:57	10°♄54'57	8.58547 AU
behind sun begin	2093 Jul 18 21:23	27°♄16'12		direct	2099 Jun 09 08:07	7°♄28'30	



evening set	2099 Sep 23 00:32	15° $\frac{1}{2}$ 10'37	
conjunction	2099 Oct 10 06:07	17° $\frac{1}{2}$ 16'21	2°13'53
minimum elong	2099 Oct 10 06:06	17° $\frac{1}{2}$ 16'21	2°13'53
max. Earth dist.	2099 Oct 10 07:47	17° $\frac{1}{2}$ 16'52	10.63972 AU
morning rise	2099 Oct 27 06:58	19° $\frac{1}{2}$ 20'42	
retrograde	2100 Feb 04 04:27	26° $\frac{1}{2}$ 38'49	
opposition	2100 Apr 13 03:44	23° $\frac{1}{2}$ 19'16	2°46'04
min. Earth dist.	2100 Apr 13 02:52	23° $\frac{1}{2}$ 19'26	8.69458 AU
direct	2100 Jun 22 12:59	19° $\frac{1}{2}$ 54'25	
evening set	2100 Oct 05 19:10	27° $\frac{1}{2}$ 28'42	
conjunction	2100 Oct 22 20:45	29° $\frac{1}{2}$ 32'01	2°14'38
minimum elong	2100 Oct 22 20:45	29° $\frac{1}{2}$ 32'01	2°14'37
max. Earth dist.	2100 Oct 22 20:44	29° $\frac{1}{2}$ 32'00	10.74423 AU
	2100 Oct 26 17:02	0° $\frac{1}{2}$	
morning rise	2100 Nov 08 17:51	1° $\frac{1}{2}$ 34'03	



retrograde	2100 Feb 04 04:27	26°♄38'49		max. Earth dist.	2105 Dec 19 13:27	27°♄41'09	11.03229 AU
opposition	2100 Apr 13 03:44	23°♄19'16	2°46'04	morning rise	2106 Jan 05 09:42	29°♄39'47	
min. Earth dist.	2100 Apr 13 02:52	23°♄19'26	8.69458 AU		2106 Jan 08 07:56	0°♄	
direct	2100 Jun 22 12:59	19°♄54'25		retrograde	2106 Apr 15 19:15	6°♄39'57	
evening set	2100 Oct 05 19:10	27°♄28'42		opposition	2106 Jun 25 04:55	3°♄22'06	0°59'57
				min. Earth dist.	2106 Jun 25 10:09	3°♄21'08	9.03417 AU
conjunction	2100 Oct 22 20:45	29°♄32'01	2°14'38	direct	2106 Sep 04 03:47	0°♄02'40	
minimum elong	2100 Oct 22 20:45	29°♄32'01	2°14'37	evening set	2106 Dec 14 12:41	7°♄05'37	
max. Earth dist.	2100 Oct 22 20:44	29°♄32'00	10.74423 AU				
	2100 Oct 26 17:02	0°♄		conjunction	2106 Dec 31 03:58	9°♄02'49	0°36'19
morning rise	2100 Nov 08 17:51	1°♄34'03		minimum elong	2106 Dec 31 03:59	9°♄02'49	0°36'18
retrograde	2101 Feb 16 08:43	8°♄45'51		max. Earth dist.	2106 Dec 30 21:48	9°♄00'59	11.03017 AU
opposition	2101 Apr 25 19:25	5°♄27'15	2°42'57	morning rise	2107 Jan 16 19:02	10°♄59'57	
min. Earth dist.	2101 Apr 25 20:30	5°♄27'02	8.79357 AU	retrograde	2107 Apr 27 17:31	18°♄02'09	
direct	2101 Jul 05 12:50	2°♄03'33		opposition	2107 Jul 07 08:37	14°♄43'41	0°28'21
evening set	2101 Oct 18 04:51	9°♄30'27		min. Earth dist.	2107 Jul 07 13:39	14°♄42'45	9.02118 AU
				direct	2107 Sep 16 03:13	11°♄24'35	
conjunction	2101 Nov 04 03:03	11°♄31'44	2°09'23	evening set	2107 Dec 25 21:50	18°♄26'28	
minimum elong	2101 Nov 04 03:04	11°♄31'44	2°09'23				
max. Earth dist.	2101 Nov 04 00:46	11°♄31'03	10.83659 AU	conjunction	2108 Jan 11 13:14	20°♄23'58	0°09'54
morning rise	2101 Nov 20 21:25	13°♄31'54		minimum elong	2108 Jan 11 13:15	20°♄23'58	0°09'53
	2101 Dec 03 15:26	15°♄		behind sun begin	2108 Jan 11 07:32	20°♄22'17	
retrograde	2102 Feb 28 09:41	20°♄38'39		behind sun end	2108 Jan 11 18:58	20°♄25'38	
opposition	2102 May 08 06:55	17°♄20'45	2°32'53	max. Earth dist.	2108 Jan 11 07:48	20°♄22'22	11.00686 AU
min. Earth dist.	2102 May 08 09:30	17°♄20'16	8.87858 AU	morning rise	2108 Jan 28 05:02	22°♄21'37	
	2102 Jun 11 19:26	15°♄		retrograde	2108 May 08 18:41	29°♄27'24	
direct	2102 Jul 18 06:34	13°♄58'12		desc. node	2108 May 28 01:48	29°♄09'31	
	2102 Aug 23 04:40	15°♄		opposition	2108 Jul 18 13:32	26°♄08'05	0°-4'-30
evening set	2102 Oct 30 06:42	21°♄18'21		min. Earth dist.	2108 Jul 18 17:47	26°♄07'17	8.98743 AU
				direct	2108 Sep 27 00:07	22°♄49'09	
conjunction	2102 Nov 16 02:20	23°♄18'02	1°58'43	evening set	2109 Jan 05 08:33	29°♄51'26	
minimum elong	2102 Nov 16 02:22	23°♄18'02	1°58'43		2109 Jan 06 13:55	0°♄	
max. Earth dist.	2102 Nov 15 22:25	23°♄16'51	10.91372 AU				
morning rise	2102 Dec 02 18:46	25°♄16'46		conjunction	2109 Jan 22 00:21	1°♄49'34	0°-17'-10
	2103 Jan 17 16:43	0°♄		minimum elong	2109 Jan 22 00:21	1°♄49'33	0°17'11
retrograde	2103 Mar 12 07:22	2°♄19'46		max. Earth dist.	2109 Jan 21 19:23	1°♄48'06	10.96314 AU
	2103 May 07 13:44	30°♄		morning rise	2109 Feb 07 17:17	3°♄48'05	
opposition	2103 May 20 15:13	29°♄02'17	2°16'38	retrograde	2109 May 21 00:47	10°♄58'53	
min. Earth dist.	2103 May 20 18:10	29°♄01'44	8.94690 AU	opposition	2109 Jul 30 20:38	7°♄38'34	0°-37'-31
direct	2103 Jul 30 18:23	25°♄40'47		min. Earth dist.	2109 Jul 31 00:41	7°♄37'49	8.93400 AU
	2103 Oct 15 12:39	0°♄		direct	2109 Oct 08 21:43	4°♄19'36	
evening set	2103 Nov 11 01:59	2°♄54'57		evening set	2110 Jan 16 22:40	11°♄23'49	
conjunction	2103 Nov 27 19:50	4°♄53'26	1°43'19	conjunction	2110 Feb 02 15:02	13°♄22'54	0°-43'-43
minimum elong	2103 Nov 27 19:52	4°♄53'27	1°43'19	minimum elong	2110 Feb 02 15:00	13°♄22'53	0°43'44
max. Earth dist.	2103 Nov 27 15:48	4°♄52'14	10.97315 AU	max. Earth dist.	2110 Feb 02 09:29	13°♄21'14	10.90049 AU
morning rise	2103 Dec 14 10:55	6°♄51'10			2110 Feb 16 04:39	15°♄	
retrograde	2104 Mar 23 04:24	13°♄51'49		morning rise	2110 Feb 19 09:31	15°♄22'37	
opposition	2104 May 31 21:07	10°♄34'29	1°55'06	retrograde	2110 Jun 02 11:26	22°♄39'44	
min. Earth dist.	2104 Jun 01 00:24	10°♄33'52	8.99647 AU	opposition	2110 Aug 12 06:47	19°♄18'20	-1°-9'-28
direct	2104 Aug 11 02:03	7°♄13'52		min. Earth dist.	2110 Aug 12 11:03	19°♄17'32	8.86279 AU
evening set	2104 Nov 21 16:23	14°♄23'03		direct	2110 Oct 20 20:10	15°♄59'08	
				evening set	2111 Jan 28 17:27	23°♄06'45	
conjunction	2104 Dec 08 08:59	16°♄20'44	1°23'54				
minimum elong	2104 Dec 08 09:01	16°♄20'45	1°23'55	conjunction	2111 Feb 14 10:51	25°♄07'06	-1°-8'-50
max. Earth dist.	2104 Dec 08 04:37	16°♄19'27	11.01308 AU	minimum elong	2111 Feb 14 10:49	25°♄07'05	1°08'50
morning rise	2104 Dec 24 23:26	18°♄17'52		max. Earth dist.	2111 Feb 14 05:35	25°♄05'30	10.82122 AU
retrograde	2105 Apr 04 00:23	25°♄17'32		morning rise	2111 Mar 03 07:13	27°♄08'19	
opposition	2105 Jun 13 01:23	22°♄00'05	1°29'12		2111 Mar 28 19:39	0°♄	
min. Earth dist.	2105 Jun 13 05:38	21°♄59'18	9.02586 AU	retrograde	2111 Jun 15 02:58	4°♄33'01	
direct	2105 Aug 23 03:47	18°♄40'10		opposition	2111 Aug 24 21:00	1°♄10'21	-1°-39'-4
evening set	2105 Dec 03 03:24	25°♄45'33		min. Earth dist.	2111 Aug 25 00:48	1°♄09'38	8.77649 AU
					2111 Sep 09 16:47	30°♄	
conjunction	2105 Dec 19 19:07	27°♄42'49	1°01'17	direct	2111 Nov 01 23:36	27°♄50'44	
minimum elong	2105 Dec 19 19:09	27°♄42'50	1°01'17		2111 Dec 22 23:11	0°♄	



evening set	2112 Feb 09 18:15	5° <del>✕</del> 03'06		conjunction	2118 May 16 06:39	25° <del>8</del> 11'32	-1°-55'-28
				minimum elong	2118 May 16 06:42	25° <del>8</del> 11'33	1°55'29
conjunction	2112 Feb 26 13:19	7° <del>✕</del> 05'03	-1°-31'-24	max. Earth dist.	2118 May 16 10:55	25° <del>8</del> 12'55	10.14164 AU
minimum elong	2112 Feb 26 13:17	7° <del>✕</del> 05'02	1°31'25	morning rise	2118 Jun 03 03:06	27° <del>8</del> 28'54	
max. Earth dist.	2112 Feb 26 09:37	7° <del>✕</del> 03'55	10.72832 AU		2118 Jun 23 18:47	0° <del>II</del>	
morning rise	2112 Mar 14 11:48	9° <del>✕</del> 08'04		retrograde	2118 Sep 17 22:09	5° <del>II</del> 45'57	
retrograde	2112 Jun 27 03:27	16° <del>✕</del> 41'16		opposition	2118 Nov 24 21:06	2° <del>II</del> 16'32	-2°-12'-19
opposition	2112 Sep 05 15:48	13° <del>✕</del> 17'18	-2°-4'-56	min. Earth dist.	2118 Nov 24 17:25	2° <del>II</del> 17'17	8.11252 AU
min. Earth dist.	2112 Sep 05 18:14	13° <del>✕</del> 16'50	8.67846 AU		2118 Dec 25 08:45	30° <del>R8</del>	
direct	2112 Nov 13 06:46	9° <del>✕</del> 57'07		direct	2119 Jan 30 08:41	28° <del>8</del> 50'28	
evening set	2113 Feb 21 02:45	17° <del>✕</del> 15'25			2119 Mar 06 20:58	0° <del>II</del>	
				evening set	2119 May 13 04:11	6° <del>II</del> 52'37	
conjunction	2113 Mar 09 23:57	19° <del>✕</del> 19'17	-1°-50'-17				
minimum elong	2113 Mar 09 23:55	19° <del>✕</del> 19'16	1°50'18	conjunction	2119 May 31 01:26	9° <del>II</del> 10'52	-1°-35'-31
max. Earth dist.	2113 Mar 09 21:36	19° <del>✕</del> 18'33	10.62558 AU	minimum elong	2119 May 31 01:29	9° <del>II</del> 10'54	1°35'32
morning rise	2113 Mar 27 00:59	21° <del>✕</del> 24'23		max. Earth dist.	2119 May 31 06:37	9° <del>II</del> 12'33	10.08659 AU
retrograde	2113 Jul 10 11:31	29° <del>✕</del> 06'34		morning rise	2119 Jun 18 01:34	11° <del>II</del> 30'05	
opposition	2113 Sep 18 15:35	25° <del>✕</del> 41'18	-2°-25'-42	retrograde	2119 Oct 02 11:39	19° <del>II</del> 48'29	
min. Earth dist.	2113 Sep 18 16:42	25° <del>✕</del> 41'06	8.57284 AU	opposition	2119 Dec 08 23:33	16° <del>II</del> 19'03	-1°-43'-42
direct	2113 Nov 25 17:09	22° <del>✕</del> 20'24		min. Earth dist.	2119 Dec 08 19:23	16° <del>II</del> 19'54	8.06807 AU
evening set	2114 Mar 05 19:47	29° <del>✕</del> 45'41		direct	2120 Feb 13 10:32	12° <del>II</del> 51'55	
	2114 Mar 07 18:42	0° <del>Y</del>		evening set	2120 May 27 00:33	20° <del>II</del> 59'07	
conjunction	2114 Mar 22 19:37	1° <del>Y</del> 51'43	-2°-4'-23	conjunction	2120 Jun 14 01:33	23° <del>II</del> 18'56	-1°-9'-40
minimum elong	2114 Mar 22 19:35	1° <del>Y</del> 51'42	2°04'25	minimum elong	2120 Jun 14 01:36	23° <del>II</del> 18'57	1°09'41
max. Earth dist.	2114 Mar 22 18:01	1° <del>Y</del> 51'13	10.51767 AU	max. Earth dist.	2120 Jun 14 06:43	23° <del>II</del> 20'37	10.05402 AU
morning rise	2114 Apr 08 23:48	3° <del>Y</del> 59'08		morning rise	2120 Jul 02 04:27	25° <del>II</del> 39'23	
retrograde	2114 Jul 24 01:42	11° <del>Y</del> 50'25			2120 Aug 08 03:49	0° <del>8</del>	
opposition	2114 Oct 01 21:06	8° <del>Y</del> 23'57	-2°-39'-57	retrograde	2120 Oct 16 01:12	3° <del>8</del> 56'51	
min. Earth dist.	2114 Oct 01 21:22	8° <del>Y</del> 23'54	8.46456 AU	opposition	2120 Dec 22 03:17	0° <del>8</del> 27'45	-1°-8'-33
direct	2114 Dec 08 11:07	5° <del>Y</del> 02'10		min. Earth dist.	2120 Dec 21 23:15	0° <del>8</del> 28'35	8.04725 AU
evening set	2115 Mar 18 22:00	12° <del>Y</del> 35'05			2120 Dec 27 18:08	30° <del>RII</del>	
conjunction	2115 Apr 05 01:09	14° <del>Y</del> 43'33	-2°-12'-39	direct	2121 Feb 26 16:58	26° <del>II</del> 59'45	
minimum elong	2115 Apr 05 01:08	14° <del>Y</del> 43'33	2°12'40		2121 Apr 26 14:46	0° <del>8</del>	
max. Earth dist.	2115 Apr 05 00:20	14° <del>Y</del> 43'18	10.40988 AU	evening set	2121 Jun 11 00:52	5° <del>8</del> 10'28	
morning rise	2115 Apr 22 09:05	16° <del>Y</del> 53'29		conjunction	2121 Jun 29 04:19	7° <del>8</del> 31'06	0°-39'-29
retrograde	2115 Aug 06 23:12	24° <del>Y</del> 53'24		minimum elong	2121 Jun 29 04:21	7° <del>8</del> 31'07	0°39'30
opposition	2115 Oct 15 08:11	21° <del>Y</del> 25'52	-2°-46'-27	max. Earth dist.	2121 Jun 29 09:12	7° <del>8</del> 32'42	10.04631 AU
min. Earth dist.	2115 Oct 15 07:52	21° <del>Y</del> 25'56	8.35906 AU	morning rise	2121 Jul 17 08:32	9° <del>8</del> 51'59	
direct	2115 Dec 21 11:51	18° <del>Y</del> 03'05		retrograde	2121 Oct 30 12:08	18° <del>8</del> 06'17	
evening set	2116 Mar 31 10:00	25° <del>Y</del> 43'58		opposition	2122 Jan 05 06:54	14° <del>8</del> 37'50	0°-29'-10
conjunction	2116 Apr 17 17:15	27° <del>Y</del> 55'00	-2°-14'-12	min. Earth dist.	2122 Jan 05 03:05	14° <del>8</del> 38'37	8.05248 AU
minimum elong	2116 Apr 17 17:15	27° <del>Y</del> 55'01	2°14'14	direct	2122 Mar 13 03:08	11° <del>8</del> 09'10	
max. Earth dist.	2116 Apr 17 17:52	27° <del>Y</del> 55'12	10.30772 AU	evening set	2122 Jun 26 02:42	19° <del>8</del> 21'34	
	2116 May 04 05:01	0° <del>8</del>		conjunction	2122 Jul 14 07:03	21° <del>8</del> 42'07	0°-6'-59
morning rise	2116 May 05 05:17	0° <del>8</del> 07'33		minimum elong	2122 Jul 14 07:03	21° <del>8</del> 42'07	0°07'00
retrograde	2116 Aug 20 02:44	8° <del>8</del> 14'59		behind sun begin	2122 Jul 14 00:15	21° <del>8</del> 39'56	
opposition	2116 Oct 28 00:15	4° <del>8</del> 46'35	-2°-44'-13	behind sun end	2122 Jul 14 13:50	21° <del>8</del> 44'18	
min. Earth dist.	2116 Oct 27 23:06	4° <del>8</del> 46'49	8.26185 AU	max. Earth dist.	2122 Jul 14 11:48	21° <del>8</del> 43'38	10.06521 AU
direct	2117 Jan 02 19:37	1° <del>8</del> 22'43		morning rise	2122 Aug 01 10:56	24° <del>8</del> 02'30	
evening set	2117 Apr 14 07:36	9° <del>8</del> 11'27			2122 Sep 24 21:20	0° <del>8</del>	
conjunction	2117 May 01 19:30	11° <del>8</del> 25'06	-2°-8'-31	asc. node	2122 Oct 02 06:59	0° <del>8</del> 34'39	
minimum elong	2117 May 01 19:32	11° <del>8</del> 25'07	2°08'32	retrograde	2122 Nov 13 17:39	2° <del>8</del> 11'35	
max. Earth dist.	2117 May 01 22:02	11° <del>8</del> 25'55	10.21665 AU		2123 Jan 03 14:34	30° <del>R8</del>	
morning rise	2117 May 19 11:47	13° <del>8</del> 40'11		opposition	2123 Jan 19 08:52	28° <del>8</del> 44'01	0°11'47
	2117 May 30 06:17	15° <del>8</del>		min. Earth dist.	2123 Jan 19 05:04	28° <del>8</del> 44'48	8.08447 AU
retrograde	2117 Sep 03 11:03	21° <del>8</del> 53'28		direct	2123 Mar 27 15:23	25° <del>8</del> 14'55	
opposition	2117 Nov 10 20:53	18° <del>8</del> 24'26	-2°-32'-48		2123 Jun 12 05:31	0° <del>8</del>	
min. Earth dist.	2117 Nov 10 18:24	18° <del>8</del> 24'57	8.17817 AU	evening set	2123 Jul 11 03:12	3° <del>8</del> 26'57	
	2118 Jan 13 10:06	15° <del>R8</del>		conjunction	2123 Jul 29 06:45	5° <del>8</del> 46'32	0°25'48
direct	2118 Jan 16 11:09	14° <del>8</del> 59'28		minimum elong	2123 Jul 29 06:44	5° <del>8</del> 46'31	0°25'49
	2118 Jan 19 12:04	15° <del>8</del>		max. Earth dist.	2123 Jul 29 11:22	5° <del>8</del> 48'01	10.11011 AU
evening set	2118 Apr 28 13:57	22° <del>8</del> 55'25		morning rise	2123 Aug 16 08:36	8° <del>8</del> 05'31	
					2123 Oct 23 12:29	15° <del>8</del>	



retrograde	2123 Nov 27 16:56	16°♏07'46		min. Earth dist.	2130 Apr 20 20:35	0°♍37'01	8.74647 AU
	2124 Jan 02 06:55	15°♎♏			2130 Apr 28 22:57	30°♎♏	
opposition	2124 Feb 02 07:59	12°♏41'16	0°51'36	direct	2130 Jun 30 13:29	27°♏12'15	
min. Earth dist.	2124 Feb 02 04:00	12°♏42'05	8.14147 AU		2130 Aug 29 17:10	0°♍	
direct	2124 Apr 10 01:56	9°♏12'03		evening set	2130 Oct 13 09:10	4°♍41'59	
	2124 Jul 05 12:10	15°♏					
evening set	2124 Jul 24 23:32	17°♏21'41		conjunction	2130 Oct 30 08:51	6°♍44'04	2°12'23
				minimum elong	2130 Oct 30 08:52	6°♍44'05	2°12'21
conjunction	2124 Aug 12 00:39	19°♏39'28	0°56'39	max. Earth dist.	2130 Oct 30 08:20	6°♍43'55	10.79379 AU
minimum elong	2124 Aug 12 00:37	19°♏39'27	0°56'39	morning rise	2130 Nov 16 04:22	8°♍44'58	
max. Earth dist.	2124 Aug 12 05:16	19°♏40'56	10.17823 AU		2131 Jan 22 09:41	15°♍	
morning rise	2124 Aug 29 22:54	21°♏56'18		retrograde	2131 Feb 23 16:33	15°♍53'23	
retrograde	2124 Dec 10 10:42	29°♏50'37			2131 Mar 28 13:00	15°♎♍	
opposition	2125 Feb 15 03:04	26°♏25'17	1°27'45	opposition	2131 May 03 09:28	12°♍34'44	2°38'03
min. Earth dist.	2125 Feb 14 22:46	26°♏26'10	8.21985 AU	min. Earth dist.	2131 May 03 09:43	12°♍34'41	8.84080 AU
direct	2125 Apr 24 09:14	22°♏56'16		direct	2131 Jul 13 08:11	9°♍11'17	
	2125 Jul 31 04:13	0°♎			2131 Oct 11 21:33	15°♍	
evening set	2125 Aug 08 13:09	1°♎01'40		evening set	2131 Oct 25 13:33	16°♍33'47	
conjunction	2125 Aug 26 10:37	3°♎17'03	1°23'47	conjunction	2131 Nov 11 10:23	18°♍34'03	2°03'57
minimum elong	2125 Aug 26 10:34	3°♎17'02	1°23'48	minimum elong	2131 Nov 11 10:25	18°♍34'04	2°03'56
max. Earth dist.	2125 Aug 26 15:21	3°♎18'33	10.26534 AU	max. Earth dist.	2131 Nov 11 09:18	18°♍33'44	10.88166 AU
morning rise	2125 Sep 13 04:12	5°♎31'13		morning rise	2131 Nov 28 03:26	20°♍33'16	
retrograde	2125 Dec 23 21:35	13°♎17'00		retrograde	2132 Mar 06 14:45	27°♍37'11	
opposition	2126 Feb 28 17:20	9°♎52'55	1°58'16	opposition	2132 May 14 18:29	24°♍19'12	2°24'20
min. Earth dist.	2126 Feb 28 13:27	9°♎53'42	8.31481 AU	min. Earth dist.	2132 May 14 20:07	24°♍18'54	8.92111 AU
direct	2126 May 08 11:57	6°♎24'21		direct	2132 Jul 24 20:22	20°♍56'59	
evening set	2126 Aug 22 18:04	14°♎24'00		evening set	2132 Nov 05 10:43	28°♍12'59	
					2132 Nov 20 13:30	0°♎	
conjunction	2126 Sep 09 11:05	16°♎36'37	1°45'53				
minimum elong	2126 Sep 09 11:01	16°♎36'36	1°45'53	conjunction	2132 Nov 22 05:15	0°♎11'49	1°50'29
max. Earth dist.	2126 Sep 09 15:16	16°♎37'56	10.36615 AU	minimum elong	2132 Nov 22 05:17	0°♎11'49	1°50'30
morning rise	2126 Sep 26 23:35	18°♎47'52		max. Earth dist.	2132 Nov 22 02:34	0°♎11'01	10.95397 AU
retrograde	2127 Jan 06 00:05	26°♎24'59		morning rise	2132 Dec 08 20:49	2°♎09'49	
opposition	2127 Mar 14 02:21	23°♎02'09	2°21'46	retrograde	2133 Mar 18 10:22	9°♎10'37	
min. Earth dist.	2127 Mar 13 23:34	23°♎02'43	8.42063 AU	opposition	2133 May 27 00:34	5°♎53'05	2°04'57
direct	2127 May 22 10:02	19°♎34'17		min. Earth dist.	2133 May 27 03:23	5°♎52'34	8.98436 AU
evening set	2127 Sep 05 13:18	27°♎27'06		direct	2133 Aug 06 05:00	2°♎31'58	
				evening set	2133 Nov 17 02:20	9°♎42'28	
conjunction	2127 Sep 23 01:25	29°♎36'48	2°02'01				
minimum elong	2127 Sep 23 01:22	29°♎36'47	2°02'01	conjunction	2133 Dec 03 19:16	11°♎40'17	1°32'43
max. Earth dist.	2127 Sep 23 04:14	29°♎37'41	10.47485 AU	minimum elong	2133 Dec 03 19:19	11°♎40'18	1°32'44
	2127 Sep 26 04:02	0°♏		max. Earth dist.	2133 Dec 03 15:22	11°♎39'08	11.00801 AU
morning rise	2127 Oct 10 08:50	1°♏45'06		morning rise	2133 Dec 20 10:04	13°♎37'29	
retrograde	2128 Jan 18 19:11	9°♏13'49		retrograde	2134 Mar 30 05:13	20°♎36'34	
opposition	2128 Mar 26 05:51	5°♏52'13	2°37'30	opposition	2134 Jun 08 04:22	17°♎19'15	1°40'51
min. Earth dist.	2128 Mar 26 04:25	5°♏52'30	8.53149 AU	min. Earth dist.	2134 Jun 08 07:32	17°♎18'39	9.02815 AU
direct	2128 Jun 04 01:35	2°♏25'15		direct	2134 Aug 18 08:38	13°♎59'08	
evening set	2128 Sep 17 22:04	10°♏10'32		evening set	2134 Nov 28 13:55	21°♎05'16	
conjunction	2128 Oct 05 05:24	12°♏17'25	2°11'47	conjunction	2134 Dec 15 05:56	23°♎02'28	1°11'25
minimum elong	2128 Oct 05 05:23	12°♏17'25	2°11'47	minimum elong	2134 Dec 15 05:58	23°♎02'28	1°11'26
max. Earth dist.	2128 Oct 05 06:27	12°♏17'44	10.58583 AU	max. Earth dist.	2134 Dec 15 02:01	23°♎01'18	11.04174 AU
morning rise	2128 Oct 22 08:14	14°♏22'55		morning rise	2134 Dec 31 20:21	24°♎59'15	
retrograde	2129 Jan 30 07:09	21°♏43'54			2135 Feb 20 06:31	0°♎	
opposition	2129 Apr 08 03:59	18°♏23'25	2°45'16	retrograde	2135 Apr 11 00:31	1°♎58'09	
min. Earth dist.	2129 Apr 08 03:17	18°♏23'33	8.64184 AU		2135 Jun 01 20:54	30°♎♎	
direct	2129 Jun 17 10:37	14°♏57'31		opposition	2135 Jun 20 07:17	28°♎40'45	1°12'59
evening set	2129 Sep 30 20:20	22°♏34'57		min. Earth dist.	2135 Jun 20 10:19	28°♎40'11	9.05092 AU
				direct	2135 Aug 30 09:20	25°♎21'28	
conjunction	2129 Oct 17 23:30	24°♏39'16	2°15'09		2135 Nov 18 03:11	0°♎	
minimum elong	2129 Oct 17 23:29	24°♏39'16	2°15'08	evening set	2135 Dec 09 23:02	2°♎24'29	
max. Earth dist.	2129 Oct 17 23:24	24°♏39'14	10.69379 AU				
morning rise	2129 Nov 03 22:21	26°♏42'17		conjunction	2135 Dec 26 14:30	4°♎21'26	0°47'25
	2129 Dec 03 10:12	0°♍		minimum elong	2135 Dec 26 14:32	4°♎21'26	0°47'25
retrograde	2130 Feb 11 13:04	3°♍56'27		max. Earth dist.	2135 Dec 26 10:39	4°♎20'18	11.05395 AU
opposition	2130 Apr 20 21:00	0°♍36'56	2°45'16	morning rise	2136 Jan 12 05:04	6°♎18'11	



retrograde	2136 Apr 21 22:41	13°♄18'24		minimum elong	2142 Mar 04 18:07	14°♄02'58	1°42'17
opposition	2136 Jul 01 10:12	10°♄00'42	0°42'21	max. Earth dist.	2142 Mar 04 12:44	14°♄01'19	10.69477 AU
min. Earth dist.	2136 Jul 01 13:50	10°♄00'02	9.05197 AU	morning rise	2142 Mar 21 17:55	16°♄06'50	
direct	2136 Sep 10 07:01	6°♄42'02		retrograde	2142 Jul 04 19:30	23°♄43'54	
evening set	2136 Dec 20 07:35	13°♄43'17		opposition	2142 Sep 13 03:44	20°♄19'45	-2°-16'-56
				min. Earth dist.	2142 Sep 13 07:31	20°♄19'01	8.64028 AU
conjunction	2137 Jan 05 22:46	15°♄40'20	0°21'34	direct	2142 Nov 20 11:08	16°♄59'33	
minimum elong	2137 Jan 05 22:47	15°♄40'20	0°21'34	evening set	2143 Feb 28 10:41	24°♄20'46	
max. Earth dist.	2137 Jan 05 17:49	15°♄38'53	11.04428 AU				
morning rise	2137 Jan 22 14:05	17°♄37'27		conjunction	2143 Mar 17 09:03	26°♄25'32	-1°-58'-37
retrograde	2137 May 03 20:10	24°♄40'25		minimum elong	2143 Mar 17 09:01	26°♄25'31	1°58'39
opposition	2137 Jul 13 13:45	21°♄22'10	0°09'59	max. Earth dist.	2143 Mar 17 05:07	26°♄24'19	10.58311 AU
min. Earth dist.	2137 Jul 13 18:16	21°♄21'20	9.03126 AU	morning rise	2143 Apr 03 11:41	28°♄31'38	
direct	2137 Sep 22 02:22	18°♄03'50			2143 Apr 15 21:29	0°♄	
desc. node	2137 Nov 05 00:10	19°♄36'11		retrograde	2143 Jul 18 05:00	6°♄18'00	
evening set	2137 Dec 31 16:58	25°♄04'49		opposition	2143 Sep 26 06:10	2°♄52'21	-2°-34'-17
				min. Earth dist.	2143 Sep 26 08:43	2°♄51'51	8.52677 AU
conjunction	2138 Jan 17 08:17	27°♄02'18	0°-5'-18		2143 Nov 09 15:24	30°♄	
minimum elong	2138 Jan 17 08:17	27°♄02'18	0°05'19	direct	2143 Dec 03 02:55	29°♄31'08	
behind sun begin	2138 Jan 17 01:32	27°♄00'19			2143 Dec 26 06:19	0°♄	
behind sun end	2138 Jan 17 15:02	27°♄04'16		evening set	2144 Mar 12 07:59	6°♄59'49	
max. Earth dist.	2138 Jan 17 02:38	27°♄00'39	11.01292 AU				
morning rise	2138 Feb 03 00:40	29°♄00'06		conjunction	2144 Mar 29 09:34	9°♄06'59	-2°-9'-39
	2138 Feb 11 18:13	0°♄		minimum elong	2144 Mar 29 09:32	9°♄06'58	2°09'41
retrograde	2138 May 15 22:44	6°♄07'21		max. Earth dist.	2144 Mar 29 07:28	9°♄06'19	10.46847 AU
opposition	2138 Jul 25 19:05	2°♄48'16	0°-22'-58	morning rise	2144 Apr 15 15:33	11°♄15'34	
min. Earth dist.	2138 Jul 25 23:47	2°♄47'24	8.98917 AU	retrograde	2144 Jul 30 23:25	19°♄11'02	
	2138 Sep 09 02:17	30°♄		opposition	2144 Oct 08 14:06	15°♄43'59	-2°-44'-29
direct	2138 Oct 04 00:59	29°♄30'03		min. Earth dist.	2144 Oct 08 15:06	15°♄43'47	8.41301 AU
	2138 Oct 28 13:40	0°♄		direct	2144 Dec 14 23:47	12°♄21'36	
evening set	2139 Jan 12 04:40	6°♄32'11		evening set	2145 Mar 25 15:01	19°♄58'18	
conjunction	2139 Jan 28 20:35	8°♄30'27	0°-32'-3	conjunction	2145 Apr 11 20:20	22°♄08'03	-2°-14'-22
minimum elong	2139 Jan 28 20:34	8°♄30'27	0°32'04	minimum elong	2145 Apr 11 20:20	22°♄08'03	2°14'24
max. Earth dist.	2139 Jan 28 15:36	8°♄28'58	10.96041 AU	max. Earth dist.	2145 Apr 11 19:38	22°♄07'49	10.35650 AU
morning rise	2139 Feb 14 14:10	10°♄29'16		morning rise	2145 Apr 29 06:11	24°♄19'16	
	2139 Mar 30 00:35	15°♄			2145 Jun 21 01:52	0°♄	
retrograde	2139 May 28 07:10	17°♄42'13		retrograde	2145 Aug 14 00:29	2°♄23'02	
	2139 Jul 29 14:03	15°♄			2145 Oct 08 06:53	30°♄	
opposition	2139 Aug 07 03:05	14°♄22'04	0°-55'-25	opposition	2145 Oct 22 03:21	28°♄54'47	-2°-46'-23
min. Earth dist.	2139 Aug 07 07:06	14°♄21'19	8.92657 AU	min. Earth dist.	2145 Oct 22 03:01	28°♄54'51	8.30473 AU
direct	2139 Oct 15 22:55	11°♄03'44		direct	2145 Dec 28 02:56	25°♄31'09	
	2139 Dec 26 07:19	15°♄			2146 Mar 11 15:45	0°♄	
evening set	2140 Jan 23 20:31	18°♄08'32		evening set	2146 Apr 08 07:41	3°♄16'02	
conjunction	2140 Feb 09 13:22	20°♄07'55	0°-57'-52	conjunction	2146 Apr 25 17:18	5°♄28'27	-2°-12'-4
minimum elong	2140 Feb 09 13:20	20°♄07'54	0°57'52	minimum elong	2146 Apr 25 17:20	5°♄28'28	2°12'05
max. Earth dist.	2140 Feb 09 08:31	20°♄06'28	10.88798 AU	max. Earth dist.	2146 Apr 25 17:27	5°♄28'30	10.25312 AU
morning rise	2140 Feb 26 08:31	22°♄08'04		morning rise	2146 May 13 07:29	7°♄42'21	
retrograde	2140 Jun 08 20:24	29°♄28'04			2146 Jul 27 06:48	15°♄	
opposition	2140 Aug 18 14:38	26°♄06'41	-1°-26'-7	retrograde	2146 Aug 28 06:38	15°♄53'05	
min. Earth dist.	2140 Aug 18 18:28	26°♄05'58	8.84515 AU		2146 Sep 29 09:05	15°♄	
direct	2140 Oct 26 22:23	22°♄47'59		opposition	2146 Nov 04 21:45	12°♄23'54	-2°-39'-16
evening set	2141 Feb 03 17:58	29°♄56'58		min. Earth dist.	2146 Nov 04 20:40	12°♄24'07	8.20778 AU
	2141 Feb 04 04:12	0°♄		direct	2147 Jan 10 14:10	8°♄58'59	
					2147 Apr 07 06:03	15°♄	
conjunction	2141 Feb 20 12:03	1°♄57'50	-1°-21'-38	evening set	2147 Apr 22 09:41	16°♄51'42	
minimum elong	2141 Feb 20 12:01	1°♄57'49	1°21'38				
max. Earth dist.	2141 Feb 20 06:36	1°♄56'11	10.79808 AU	conjunction	2147 May 10 00:02	19°♄06'47	-2°-2'-24
morning rise	2141 Mar 09 09:19	3°♄59'41		minimum elong	2147 May 10 00:05	19°♄06'48	2°02'25
retrograde	2141 Jun 21 16:55	11°♄27'50		max. Earth dist.	2147 May 10 01:17	19°♄07'11	10.16403 AU
opposition	2141 Aug 31 06:40	8°♄05'07	-1°-53'-44	morning rise	2147 May 27 18:42	21°♄23'13	
min. Earth dist.	2141 Aug 31 10:40	8°♄04'22	8.74816 AU	retrograde	2147 Sep 11 16:25	29°♄39'02	
direct	2141 Nov 08 02:21	4°♄45'46		opposition	2147 Nov 18 20:22	26°♄09'14	-2°-22'-55
evening set	2142 Feb 15 22:19	12°♄00'19		min. Earth dist.	2147 Nov 18 18:41	26°♄09'35	8.12758 AU
				direct	2148 Jan 24 08:52	22°♄43'04	
conjunction	2142 Mar 04 18:09	14°♄02'58	-1°-42'-15		2148 Apr 30 04:04	0°♄	



evening set	2148 May 05 20:22	0°II42'52		conjunction	2154 Aug 20 07:46	27°Ω23'14	1°11'56
				minimum elong	2154 Aug 20 07:43	27°Ω23'13	1°11'56
conjunction	2148 May 23 15:30	3°II00'21	-1°-45'-32	max. Earth dist.	2154 Aug 20 13:07	27°Ω24'56	10.21590 AU
minimum elong	2148 May 23 15:33	3°II00'22	1°45'33	morning rise	2154 Sep 07 03:44	29°Ω38'50	
max. Earth dist.	2148 May 23 18:03	3°II01'10	10.09429 AU		2154 Sep 09 23:48	0°൬	
morning rise	2148 Jun 10 14:15	5°II18'57		retrograde	2154 Dec 18 06:28	7°൬29'05	
retrograde	2148 Sep 25 04:55	13°II37'33		opposition	2155 Feb 22 23:53	4°൬04'24	1°45'08
opposition	2148 Dec 01 21:59	10°II07'30	-1°-57'-52	min. Earth dist.	2155 Feb 22 19:52	4°൬05'12	8.26388 AU
min. Earth dist.	2148 Dec 01 19:28	10°II08'01	8.06889 AU	direct	2155 May 02 12:01	0°൬35'37	
direct	2149 Feb 06 09:14	6°II40'11		evening set	2155 Aug 16 18:16	8°൬38'37	
evening set	2149 May 20 14:10	14°II45'52					
				conjunction	2155 Sep 03 13:17	10°൬52'37	1°36'28
conjunction	2149 Jun 07 13:36	17°II05'16	-1°-22'-13	minimum elong	2155 Sep 03 13:14	10°൬52'36	1°36'29
minimum elong	2149 Jun 07 13:39	17°II05'17	1°22'14	max. Earth dist.	2155 Sep 03 17:38	10°൬53'59	10.31471 AU
max. Earth dist.	2149 Jun 07 17:40	17°II06'35	10.04814 AU	morning rise	2155 Sep 21 04:22	13°൬05'22	
morning rise	2149 Jun 25 15:35	19°II25'28		retrograde	2155 Dec 31 12:06	20°൬46'56	
retrograde	2149 Oct 09 18:18	27°II44'22		opposition	2156 Mar 07 11:50	17°൬23'42	2°11'57
opposition	2149 Dec 16 01:36	24°II14'26	-1°-25'-26	min. Earth dist.	2156 Mar 07 07:58	17°൬24'29	8.36910 AU
min. Earth dist.	2149 Dec 15 21:53	24°II15'12	8.03542 AU	direct	2156 May 15 13:55	13°൬55'43	
direct	2150 Feb 20 14:56	20°II46'10		evening set	2156 Aug 29 18:34	21°൬52'18	
evening set	2150 Jun 04 12:56	28°II56'08					
	2150 Jun 12 19:39	0°☾		conjunction	2156 Sep 16 08:53	24°൬03'23	1°55'23
				minimum elong	2156 Sep 16 08:50	24°൬03'23	1°55'24
conjunction	2150 Jun 22 15:37	1°☾16'43	0°-53'-46	max. Earth dist.	2156 Sep 16 12:46	24°൬04'36	10.42422 AU
minimum elong	2150 Jun 22 15:40	1°☾16'44	0°53'47	morning rise	2156 Oct 03 18:46	26°൬13'07	
max. Earth dist.	2150 Jun 22 21:17	1°☾18'34	10.02857 AU		2156 Nov 06 01:38	0°☾	
morning rise	2150 Jul 10 19:34	3°☾37'45		retrograde	2157 Jan 12 12:00	3°☾46'06	
retrograde	2150 Oct 24 06:17	11°☾54'30		opposition	2157 Mar 20 18:24	0°☾24'16	2°31'14
opposition	2150 Dec 30 05:41	8°☾25'03	0°-47'-38	min. Earth dist.	2157 Mar 20 14:51	0°☾24'58	8.48203 AU
min. Earth dist.	2150 Dec 30 00:49	8°☾26'03	8.02941 AU		2157 Mar 25 21:47	30°☾൬	
direct	2151 Mar 07 00:02	4°☾56'03		direct	2157 May 29 08:17	26°൬57'17	
evening set	2151 Jun 19 14:40	13°☾08'30			2157 Jul 30 10:18	0°☾	
				evening set	2157 Sep 12 08:42	4°☾46'27	
conjunction	2151 Jul 07 19:05	15°☾29'26	0°-22'-2				
minimum elong	2151 Jul 07 19:07	15°☾29'26	0°22'03	conjunction	2157 Sep 29 18:19	6°☾54'39	2°08'03
max. Earth dist.	2151 Jul 08 01:38	15°☾31'33	10.03688 AU	minimum elong	2157 Sep 29 18:17	6°☾54'39	2°08'03
morning rise	2151 Jul 25 23:23	17°☾50'21		max. Earth dist.	2157 Sep 29 21:40	6°☾55'41	10.53845 AU
retrograde	2151 Nov 07 14:54	26°☾02'42		morning rise	2157 Oct 16 23:10	9°☾01'26	
opposition	2152 Jan 13 08:42	22°☾34'05	0°-7'00	retrograde	2158 Jan 25 04:50	16°☾26'14	
min. Earth dist.	2152 Jan 13 03:27	22°☾35'11	8.05136 AU	opposition	2158 Apr 02 19:23	13°☾05'40	2°42'34
asc. node	2152 Mar 18 00:12	19°☾04'59		min. Earth dist.	2158 Apr 02 16:56	13°☾06'09	8.59659 AU
direct	2152 Mar 20 10:32	19°☾04'40		direct	2158 Jun 11 19:51	9°☾39'48	
evening set	2152 Jul 03 16:26	27°☾17'37		evening set	2158 Sep 25 12:27	17°☾21'04	
conjunction	2152 Jul 21 20:46	29°☾37'57	0°10'57	conjunction	2158 Oct 12 17:37	19°☾26'33	2°14'16
minimum elong	2152 Jul 21 20:46	29°☾37'57	0°10'57	minimum elong	2158 Oct 12 17:36	19°☾26'33	2°14'16
behind sun begin	2152 Jul 21 15:18	29°☾36'12		max. Earth dist.	2158 Oct 12 19:42	19°☾27'12	10.65128 AU
behind sun end	2152 Jul 22 02:15	29°☾39'42		morning rise	2158 Oct 29 18:04	21°☾30'40	
max. Earth dist.	2152 Jul 22 03:29	29°☾40'06	10.07259 AU	retrograde	2159 Feb 06 14:04	28°☾48'01	
	2152 Jul 24 16:53	0°Ω		opposition	2159 Apr 15 15:15	25°☾28'34	2°45'59
morning rise	2152 Aug 08 23:43	1°Ω57'51		min. Earth dist.	2159 Apr 15 14:42	25°☾28'41	8.70664 AU
retrograde	2152 Nov 20 19:00	10°Ω03'59		direct	2159 Jun 25 01:40	22°☾03'50	
opposition	2153 Jan 26 09:36	6°Ω36'31	0°33'42	evening set	2159 Oct 08 06:12	29°☾37'13	
min. Earth dist.	2153 Jan 26 04:30	6°Ω37'34	8.10000 AU		2159 Oct 11 10:47	0°ℳ	
direct	2153 Apr 03 20:28	3°Ω06'59					
evening set	2153 Jul 18 15:10	11°Ω18'25		conjunction	2159 Oct 25 07:20	1°ℳ40'16	2°14'11
				minimum elong	2159 Oct 25 07:20	1°ℳ40'16	2°14'10
conjunction	2153 Aug 05 17:40	13°Ω37'16	0°42'53	max. Earth dist.	2159 Oct 25 06:59	1°ℳ40'09	10.75673 AU
minimum elong	2153 Aug 05 17:38	13°Ω37'16	0°42'54	morning rise	2159 Nov 11 04:13	3°ℳ42'03	
max. Earth dist.	2153 Aug 06 00:00	13°Ω39'19	10.13352 AU	retrograde	2160 Feb 18 18:29	10°ℳ53'04	
	2153 Aug 16 11:21	15°Ω		opposition	2160 Apr 27 06:16	7°ℳ34'32	2°41'54
morning rise	2153 Aug 23 17:42	15°Ω55'20		min. Earth dist.	2160 Apr 27 07:19	7°ℳ34'20	8.80643 AU
retrograde	2153 Dec 04 16:51	23°Ω53'57		direct	2160 Jul 07 00:58	4°ℳ10'59	
opposition	2154 Feb 09 07:01	20°Ω27'50	1°11'50	evening set	2160 Oct 19 14:46	11°ℳ36'51	
min. Earth dist.	2154 Feb 09 02:30	20°Ω28'45	8.17233 AU				
direct	2154 Apr 18 05:41	16°Ω58'30		conjunction	2160 Nov 05 12:40	13°ℳ37'54	2°08'11
evening set	2154 Aug 02 08:31	25°Ω06'33		minimum elong	2160 Nov 05 12:41	13°ℳ37'54	2°08'11



max. Earth dist.	2160 Nov 05 10:18	13°♄37'11	10.84962 AU	max. Earth dist.	2167 Jan 12 14:27	22°♄21'26	11.00890 AU
	2160 Nov 16 22:57	15°♄		morning rise	2167 Jan 29 11:40	24°♄20'40	
morning rise	2160 Nov 22 06:52	15°♄37'50			2167 Mar 29 12:38	0°≈	
retrograde	2161 Mar 01 18:00	22°♄43'49		desc. node	2167 Apr 11 12:31	0°≈44'04	
opposition	2161 May 09 17:08	19°♄25'58	2°30'57	retrograde	2167 May 11 03:26	1°≈26'33	
min. Earth dist.	2161 May 09 19:01	19°♄25'36	8.89147 AU		2167 Jun 23 21:36	30°♄	
direct	2161 Jul 19 17:31	16°♄03'34		opposition	2167 Jul 20 21:36	28°♄07'15	0°-8'-47
evening set	2161 Oct 31 15:27	23°♄22'40		min. Earth dist.	2167 Jul 21 02:06	28°♄06'25	8.98806 AU
				direct	2167 Sep 29 07:36	24°♄48'23	
conjunction	2161 Nov 17 11:00	25°♄22'08	1°56'52		2167 Dec 22 07:18	0°≈	
minimum elong	2161 Nov 17 11:02	25°♄22'09	1°56'51	evening set	2168 Jan 07 15:12	1°≈50'34	
max. Earth dist.	2161 Nov 17 07:52	25°♄21'12	10.92631 AU				
morning rise	2161 Dec 04 03:14	27°♄20'40		conjunction	2168 Jan 24 06:55	3°≈48'43	0°-20'-37
	2161 Dec 28 00:55	0°♄		minimum elong	2168 Jan 24 06:54	3°≈48'42	0°20'38
retrograde	2162 Mar 13 16:08	4°♄23'01		max. Earth dist.	2168 Jan 24 01:00	3°≈46'58	10.96244 AU
opposition	2162 May 22 00:48	1°♄05'36	2°13'58	morning rise	2168 Feb 10 00:01	5°≈47'17	
min. Earth dist.	2162 May 22 03:15	1°♄05'09	8.95889 AU	retrograde	2168 May 22 08:43	12°≈58'20	
	2162 Jun 05 23:09	30°♄		opposition	2168 Aug 01 04:51	9°≈38'01	0°-41'-40
direct	2162 Aug 01 05:02	27°♄44'15		min. Earth dist.	2168 Aug 01 09:46	9°≈37'06	8.93198 AU
	2162 Sep 24 08:19	0°♄		direct	2168 Oct 10 04:15	6°≈19'04	
evening set	2162 Nov 12 09:59	4°♄57'29		evening set	2169 Jan 18 05:28	13°≈23'23	
					2169 Jan 31 18:46	15°≈	
conjunction	2162 Nov 29 03:46	6°♄55'48	1°40'53	conjunction	2169 Feb 03 21:51	15°≈22'30	0°-47'-1
minimum elong	2162 Nov 29 03:48	6°♄55'48	1°40'53	minimum elong	2169 Feb 03 21:50	15°≈22'29	0°47'01
max. Earth dist.	2162 Nov 29 00:05	6°♄54'42	10.98446 AU	max. Earth dist.	2169 Feb 03 15:47	15°≈20'41	10.89722 AU
morning rise	2162 Dec 15 18:43	8°♄53'22		morning rise	2169 Feb 20 16:33	17°≈22'18	
retrograde	2163 Mar 25 13:04	15°♄53'26		retrograde	2169 Jun 03 18:22	24°≈39'53	
opposition	2163 Jun 03 06:09	12°♄36'12	1°51'49	opposition	2169 Aug 13 15:02	21°≈18'24	-1°-13'-20
min. Earth dist.	2163 Jun 03 09:51	12°♄35'31	9.00688 AU	min. Earth dist.	2169 Aug 13 19:45	21°≈17'31	8.85829 AU
direct	2163 Aug 13 10:04	9°♄15'44		direct	2169 Oct 22 04:16	17°≈59'10	
evening set	2163 Nov 23 23:49	16°♄24'08		evening set	2170 Jan 30 00:33	25°≈07'04	
conjunction	2163 Dec 10 16:15	18°♄21'41	1°21'01	conjunction	2170 Feb 15 18:09	27°≈07'31	-1°-11'-49
minimum elong	2163 Dec 10 16:17	18°♄21'41	1°21'02	minimum elong	2170 Feb 15 18:07	27°≈07'30	1°11'49
max. Earth dist.	2163 Dec 10 11:10	18°♄20'10	11.02257 AU	max. Earth dist.	2170 Feb 15 13:12	27°≈06'01	10.81547 AU
morning rise	2163 Dec 27 06:46	20°♄18'43		morning rise	2170 Mar 04 14:36	29°≈08'50	
retrograde	2164 Apr 05 07:03	27°♄17'58			2170 Mar 11 21:37	0°♄	
opposition	2164 Jun 14 10:07	24°♄00'36	1°25'27	retrograde	2170 Jun 16 12:44	6°♄34'08	
min. Earth dist.	2164 Jun 14 14:59	23°♄59'42	9.03426 AU	opposition	2170 Aug 26 05:23	3°♄11'22	-1°-42'-30
direct	2164 Aug 24 12:24	20°♄40'49		min. Earth dist.	2170 Aug 26 08:56	3°♄10'42	8.76962 AU
evening set	2164 Dec 04 10:18	27°♄45'35			2170 Oct 21 14:09	30°♄	
				direct	2170 Nov 03 07:42	29°≈51'43	
conjunction	2164 Dec 21 01:56	29°♄42'44	0°58'04		2170 Nov 15 21:42	0°♄	
minimum elong	2164 Dec 21 01:58	29°♄42'45	0°58'04	evening set	2171 Feb 11 01:52	7°♄04'30	
max. Earth dist.	2164 Dec 20 19:46	29°♄40'55	11.03960 AU				
	2164 Dec 23 12:24	0°♄		conjunction	2171 Feb 27 21:06	9°♄06'35	-1°-33'-57
morning rise	2165 Jan 06 16:37	1°♄39'38		minimum elong	2171 Feb 27 21:04	9°♄06'34	1°33'58
retrograde	2165 Apr 17 03:09	8°♄39'35		max. Earth dist.	2171 Feb 27 17:34	9°♄05'30	10.72030 AU
opposition	2165 Jun 26 13:19	5°♄21'48	0°55'52	morning rise	2171 Mar 16 19:40	11°♄09'45	
min. Earth dist.	2165 Jun 26 18:27	5°♄20'51	9.04022 AU	retrograde	2171 Jun 29 13:28	18°♄43'40	
direct	2165 Sep 05 13:01	2°♄02'30		opposition	2171 Sep 08 00:34	15°♄19'34	-2°-7'-46
evening set	2165 Dec 15 19:16	9°♄04'58		min. Earth dist.	2171 Sep 08 02:45	15°♄19'09	8.66950 AU
				direct	2171 Nov 15 13:35	11°♄59'18	
conjunction	2166 Jan 01 10:40	11°♄02'07	0°32'54	evening set	2172 Feb 23 11:01	19°♄18'12	
minimum elong	2166 Jan 01 10:41	11°♄02'07	0°32'53				
max. Earth dist.	2166 Jan 01 04:54	11°♄00'24	11.03496 AU	conjunction	2172 Mar 11 08:19	21°♄22'13	-1°-52'-17
morning rise	2166 Jan 18 01:45	12°♄59'13		minimum elong	2172 Mar 11 08:17	21°♄22'13	1°52'18
retrograde	2166 Apr 29 01:07	20°♄01'22		max. Earth dist.	2172 Mar 11 05:17	21°♄21'17	10.61571 AU
opposition	2166 Jul 08 16:40	16°♄42'55	0°24'06	morning rise	2172 Mar 28 09:37	23°♄27'31	
min. Earth dist.	2166 Jul 08 21:19	16°♄42'03	9.02458 AU		2172 Jun 04 00:18	0°♄	
direct	2166 Sep 17 10:28	13°♄23'56		retrograde	2172 Jul 11 21:09	1°♄10'31	
evening set	2166 Dec 27 04:23	20°♄25'32			2172 Aug 19 06:33	30°♄	
				opposition	2172 Sep 20 00:55	27°♄45'07	-2°-27'-46
conjunction	2167 Jan 12 19:50	22°♄23'00	0°06'25	min. Earth dist.	2172 Sep 20 02:28	27°♄44'49	8.56224 AU
minimum elong	2167 Jan 12 19:51	22°♄23'01	0°06'24	direct	2172 Nov 27 01:38	24°♄24'05	
behind sun begin	2167 Jan 12 13:16	22°♄21'05			2173 Feb 19 17:36	0°♄	
behind sun end	2167 Jan 13 02:26	22°♄24'56					



evening set	2173 Mar 07 04:49	1°♊50'05		max. Earth dist.	2179 Jun 16 21:00	25°♊35'52	10.04971 AU
				morning rise	2179 Jul 04 19:22	27°♊54'53	
conjunction	2173 Mar 24 04:50	3°♊56'20	-2°-5'-41		2179 Jul 21 15:32	0°♊	
minimum elong	2173 Mar 24 04:48	3°♊56'20	2°05'43	retrograde	2179 Oct 18 14:51	6°♊12'15	
max. Earth dist.	2173 Mar 24 02:21	3°♊55'34	10.50643 AU	opposition	2179 Dec 24 16:11	2°♊43'11	-1°-3'-51
morning rise	2173 Apr 10 09:26	6°♊04'00		min. Earth dist.	2179 Dec 24 12:28	2°♊43'57	8.04472 AU
retrograde	2173 Jul 25 12:42	13°♊56'08			2180 Jan 31 16:18	30°♊	
opposition	2173 Oct 03 06:57	10°♊29'32	-2°-41'-7	direct	2180 Feb 29 07:10	29°♊15'03	
min. Earth dist.	2173 Oct 03 07:59	10°♊29'20	8.45279 AU		2180 Mar 28 19:06	0°♊	
direct	2173 Dec 09 19:52	7°♊07'34		evening set	2180 Jun 12 15:42	7°♊26'07	
evening set	2174 Mar 20 07:51	14°♊41'19					
				conjunction	2180 Jun 30 19:17	9°♊46'48	0°-35'-32
conjunction	2174 Apr 06 11:21	16°♊50'02	-2°-13'-9	minimum elong	2180 Jun 30 19:18	9°♊46'48	0°35'33
minimum elong	2174 Apr 06 11:21	16°♊50'02	2°13'11	max. Earth dist.	2180 Jun 30 23:50	9°♊48'16	10.04546 AU
max. Earth dist.	2174 Apr 06 10:20	16°♊49'43	10.39770 AU	morning rise	2180 Jul 18 23:38	12°♊07'41	
morning rise	2174 Apr 23 19:38	19°♊00'15		retrograde	2180 Nov 01 00:17	20°♊21'39	
retrograde	2174 Aug 08 10:28	27°♊01'02		opposition	2181 Jan 06 19:44	16°♊53'16	0°-24'-7
opposition	2174 Oct 16 18:34	23°♊33'21	-2°-46'-35	min. Earth dist.	2181 Jan 06 16:00	16°♊54'02	8.05306 AU
min. Earth dist.	2174 Oct 16 18:34	23°♊33'21	8.34665 AU	direct	2181 Mar 14 17:58	13°♊24'32	
direct	2174 Dec 22 21:32	20°♊10'23		evening set	2181 Jun 27 17:38	21°♊37'05	
evening set	2175 Apr 02 20:43	27°♊52'11					
	2175 Apr 19 17:26	0°♊		conjunction	2181 Jul 15 21:59	23°♊57'36	0°-2'-55
				minimum elong	2181 Jul 15 22:00	23°♊57'36	0°02'55
conjunction	2175 Apr 20 04:27	0°♊03'31	-2°-13'-51	behind sun begin	2181 Jul 15 14:40	23°♊55'15	
minimum elong	2175 Apr 20 04:28	0°♊03'31	2°13'53	behind sun end	2181 Jul 16 05:20	23°♊59'57	
max. Earth dist.	2175 Apr 20 05:39	0°♊03'54	10.29524 AU	max. Earth dist.	2181 Jul 16 02:49	23°♊59'08	10.06709 AU
morning rise	2175 May 07 16:48	2°♊16'20		morning rise	2181 Aug 03 01:46	26°♊17'54	
retrograde	2175 Aug 22 14:06	10°♊24'37		asc. node	2181 Aug 17 21:12	28°♊08'01	
opposition	2175 Oct 30 11:15	6°♊56'04	-2°-43'-15		2181 Sep 03 03:34	0°♊	
min. Earth dist.	2175 Oct 30 09:42	6°♊56'23	8.24953 AU	retrograde	2181 Nov 15 05:40	4°♊26'33	
direct	2176 Jan 05 06:50	3°♊32'03		opposition	2182 Jan 20 21:41	0°♊59'04	0°16'50
evening set	2176 Apr 15 19:17	11°♊21'42		min. Earth dist.	2182 Jan 20 17:27	0°♊59'57	8.08752 AU
					2182 Feb 02 00:52	30°♊	
conjunction	2176 May 03 07:43	13°♊35'40	-2°-7'-16	direct	2182 Mar 29 04:55	27°♊29'59	
minimum elong	2176 May 03 07:45	13°♊35'41	2°07'17		2182 May 22 02:58	0°♊	
max. Earth dist.	2176 May 03 10:54	13°♊36'42	10.20466 AU	evening set	2182 Jul 12 17:54	5°♊41'58	
	2176 May 14 07:02	15°♊					
morning rise	2176 May 21 00:21	15°♊51'02		conjunction	2182 Jul 30 21:21	8°♊01'27	0°29'46
retrograde	2176 Sep 04 23:16	24°♊05'05		minimum elong	2182 Jul 30 21:20	8°♊01'27	0°29'47
opposition	2176 Nov 12 08:29	20°♊35'56	-2°-30'-43	max. Earth dist.	2182 Jul 31 02:34	8°♊03'08	10.11422 AU
min. Earth dist.	2176 Nov 12 05:24	20°♊36'33	8.16675 AU	morning rise	2182 Aug 17 22:52	10°♊20'18	
direct	2177 Jan 17 22:18	17°♊10'49			2182 Sep 27 13:17	15°♊	
evening set	2177 Apr 30 02:49	25°♊07'40		retrograde	2182 Nov 29 06:19	18°♊22'04	
					2183 Feb 02 23:25	15°♊	
conjunction	2177 May 17 19:58	27°♊24'06	-1°-53'-20	opposition	2183 Feb 03 20:40	14°♊55'39	0°56'20
minimum elong	2177 May 17 20:01	27°♊24'07	1°53'21	min. Earth dist.	2183 Feb 03 16:05	14°♊56'35	8.14654 AU
max. Earth dist.	2177 May 18 00:25	27°♊25'33	10.13107 AU	direct	2183 Apr 12 14:52	11°♊26'30	
morning rise	2177 Jun 04 16:47	29°♊41'45			2183 Jun 17 09:01	15°♊	
	2177 Jun 07 02:42	0°♊		evening set	2183 Jul 27 14:00	19°♊35'58	
retrograde	2177 Sep 19 12:21	7°♊59'21					
opposition	2177 Nov 26 09:13	4°♊29'53	-2°-9'-11	conjunction	2183 Aug 14 14:54	21°♊53'35	1°00'15
min. Earth dist.	2177 Nov 26 05:16	4°♊30'42	8.10305 AU	minimum elong	2183 Aug 14 14:51	21°♊53'35	1°00'16
direct	2178 Jan 31 18:58	1°♊03'40		max. Earth dist.	2183 Aug 14 20:14	21°♊55'18	10.18416 AU
evening set	2178 May 14 17:58	9°♊06'40		morning rise	2183 Sep 01 12:39	24°♊10'14	
					2183 Oct 25 15:47	0°♊	
conjunction	2178 Jun 01 15:32	11°♊25'09	-1°-32'-35	retrograde	2183 Dec 12 23:46	2°♊04'00	
minimum elong	2178 Jun 01 15:35	11°♊25'10	1°32'36		2184 Jan 31 11:54	30°♊	
max. Earth dist.	2178 Jun 01 20:34	11°♊26'47	10.07864 AU	opposition	2184 Feb 17 15:32	28°♊38'49	1°31'54
morning rise	2178 Jun 19 16:02	13°♊44'36		min. Earth dist.	2184 Feb 17 11:08	28°♊39'42	8.22658 AU
retrograde	2178 Oct 04 02:34	22°♊03'16		direct	2184 Apr 25 22:17	25°♊09'52	
opposition	2178 Dec 10 12:13	18°♊33'49	-1°-39'-39		2184 Jul 13 12:27	0°♊	
min. Earth dist.	2178 Dec 10 08:08	18°♊34'40	8.06183 AU	evening set	2184 Aug 10 03:14	3°♊15'01	
direct	2179 Feb 14 22:46	15°♊06'33					
evening set	2179 May 29 14:56	23°♊14'20		conjunction	2184 Aug 28 00:18	5°♊30'11	1°26'51
				minimum elong	2184 Aug 28 00:15	5°♊30'10	1°26'51
conjunction	2179 Jun 16 16:10	25°♊34'18	-1°-6'-7	max. Earth dist.	2184 Aug 28 05:19	5°♊31'46	10.27272 AU
minimum elong	2179 Jun 16 16:13	25°♊34'19	1°06'07	morning rise	2184 Sep 14 17:21	7°♊44'07	



retrograde	2184 Dec 25 09:32	15° $\mathring{M}$ 29'20		retrograde	2191 Mar 08 23:11	29° $\mathring{M}$ 42'01	
opposition	2185 Mar 02 05:43	12° $\mathring{M}$ 05'25	2°01'37	opposition	2191 May 17 04:34	26° $\mathring{M}$ 24'05	2°21'58
min. Earth dist.	2185 Mar 02 02:14	12° $\mathring{M}$ 06'07	8.32284 AU	min. Earth dist.	2191 May 17 06:38	26° $\mathring{M}$ 23'42	8.92922 AU
direct	2185 May 10 01:19	8° $\mathring{M}$ 36'59		direct	2191 Jul 27 07:39	23° $\mathring{M}$ 01'56	
evening set	2185 Aug 24 07:30	16° $\mathring{M}$ 36'15		evening set	2191 Nov 05 07:52	0° $\mathring{A}$	
					2191 Nov 07 19:30	0° $\mathring{A}$ 17'16	
conjunction	2185 Sep 10 23:57	18° $\mathring{M}$ 48'37	1°48'14	conjunction	2191 Nov 24 13:50	2° $\mathring{A}$ 15'57	1°48'17
minimum elong	2185 Sep 10 23:54	18° $\mathring{M}$ 48'36	1°48'14	minimum elong	2191 Nov 24 13:52	2° $\mathring{A}$ 15'58	1°48'17
max. Earth dist.	2185 Sep 11 03:46	18° $\mathring{M}$ 49'49	10.37466 AU	max. Earth dist.	2191 Nov 24 10:42	2° $\mathring{A}$ 15'02	10.96157 AU
morning rise	2185 Sep 28 11:58	20° $\mathring{M}$ 59'37		morning rise	2191 Dec 11 05:23	4° $\mathring{A}$ 13'50	
retrograde	2186 Jan 07 11:51	28° $\mathring{M}$ 36'10		retrograde	2192 Mar 19 19:01	11° $\mathring{A}$ 14'14	
opposition	2186 Mar 15 14:29	25° $\mathring{M}$ 13'32	2°24'11	opposition	2192 May 28 10:10	7° $\mathring{A}$ 56'43	2°01'55
min. Earth dist.	2186 Mar 15 12:07	25° $\mathring{M}$ 14'00	8.42966 AU	min. Earth dist.	2192 May 28 12:37	7° $\mathring{A}$ 56'16	8.99135 AU
direct	2186 May 23 22:33	21° $\mathring{M}$ 45'48		direct	2192 Aug 07 15:18	4° $\mathring{A}$ 35'42	
evening set	2186 Sep 07 01:57	29° $\mathring{M}$ 38'07		evening set	2192 Nov 18 10:23	11° $\mathring{A}$ 45'31	
	2186 Sep 10 01:40	0° $\mathring{A}$					
conjunction	2186 Sep 24 13:32	1° $\mathring{A}$ 47'35	2°03'35	conjunction	2192 Dec 05 03:19	13° $\mathring{A}$ 43'14	1°30'01
minimum elong	2186 Sep 24 13:29	1° $\mathring{A}$ 47'34	2°03'35	minimum elong	2192 Dec 05 03:21	13° $\mathring{A}$ 43'15	1°30'02
max. Earth dist.	2186 Sep 24 15:42	1° $\mathring{A}$ 48'15	10.48419 AU	max. Earth dist.	2192 Dec 05 00:01	13° $\mathring{A}$ 42'16	11.01441 AU
morning rise	2186 Oct 11 20:36	3° $\mathring{A}$ 55'38		morning rise	2192 Dec 21 18:01	15° $\mathring{A}$ 40'21	
retrograde	2187 Jan 20 05:36	11° $\mathring{A}$ 23'48		retrograde	2193 Mar 31 13:26	22° $\mathring{A}$ 39'08	
opposition	2187 Mar 28 17:31	8° $\mathring{A}$ 02'21	2°38'53	opposition	2193 Jun 09 13:37	19° $\mathring{A}$ 21'46	1°37'16
min. Earth dist.	2187 Mar 28 15:59	8° $\mathring{A}$ 02'40	8.54112 AU	min. Earth dist.	2193 Jun 09 16:09	19° $\mathring{A}$ 21'18	9.03383 AU
direct	2187 Jun 06 14:19	4° $\mathring{A}$ 35'33		direct	2193 Aug 19 18:14	16° $\mathring{A}$ 01'44	
evening set	2187 Sep 20 09:54	12° $\mathring{A}$ 20'15		evening set	2193 Nov 29 21:24	23° $\mathring{A}$ 07'15	
conjunction	2187 Oct 07 16:51	14° $\mathring{A}$ 26'54	2°12'31	conjunction	2193 Dec 16 13:26	25° $\mathring{A}$ 04'23	1°08'19
minimum elong	2187 Oct 07 16:49	14° $\mathring{A}$ 26'54	2°12'30	minimum elong	2193 Dec 16 13:28	25° $\mathring{A}$ 04'24	1°08'20
max. Earth dist.	2187 Oct 07 17:48	14° $\mathring{A}$ 27'12	10.59558 AU	max. Earth dist.	2193 Dec 16 10:04	25° $\mathring{A}$ 03'23	11.04674 AU
morning rise	2187 Oct 24 19:19	16° $\mathring{A}$ 32'11		morning rise	2194 Jan 02 03:50	27° $\mathring{A}$ 01'06	
retrograde	2188 Feb 01 16:56	23° $\mathring{A}$ 52'38		retrograde	2194 Jan 29 14:32	0° $\mathring{B}$	
opposition	2188 Apr 09 15:15	20° $\mathring{A}$ 32'16	2°45'37	opposition	2194 Apr 12 09:51	3° $\mathring{B}$ 59'46	
min. Earth dist.	2188 Apr 09 13:55	20° $\mathring{A}$ 32'32	8.65157 AU	min. Earth dist.	2194 Jun 21 16:12	0° $\mathring{B}$ 42'22	1°09'00
direct	2188 Jun 18 23:47	17° $\mathring{A}$ 06'33		direct	2194 Jun 21 19:20	0° $\mathring{B}$ 41'47	9.05513 AU
evening set	2188 Oct 02 07:20	24° $\mathring{A}$ 43'19		evening set	2194 Jul 01 07:45	30° $\mathring{R}$ $\mathring{A}$	
conjunction	2188 Oct 19 10:13	26° $\mathring{A}$ 47'26	2°15'03	conjunction	2194 Aug 31 17:52	27° $\mathring{A}$ 23'07	
minimum elong	2188 Oct 19 10:13	26° $\mathring{A}$ 47'26	2°15'02	minimum elong	2194 Oct 29 02:09	0° $\mathring{B}$	
max. Earth dist.	2188 Oct 19 10:53	26° $\mathring{A}$ 47'38	10.70346 AU	max. Earth dist.	2194 Dec 11 06:14	4° $\mathring{B}$ 25'38	
morning rise	2188 Nov 05 08:39	28° $\mathring{A}$ 50'13		morning rise	2194 Dec 27 21:37	6° $\mathring{B}$ 22'31	0°44'03
retrograde	2188 Nov 15 06:47	0° $\mathring{M}$		retrograde	2194 Dec 27 21:38	6° $\mathring{B}$ 22'32	0°44'03
opposition	2189 Feb 13 00:27	6° $\mathring{M}$ 03'53		opposition	2194 Dec 27 17:12	6° $\mathring{B}$ 21'13	11.05740 AU
min. Earth dist.	2189 Apr 22 07:58	2° $\mathring{M}$ 44'29	2°44'38	min. Earth dist.	2195 Jan 13 12:18	8° $\mathring{B}$ 19'15	
direct	2189 Apr 22 07:15	2° $\mathring{M}$ 44'37	8.75592 AU	direct	2195 Apr 24 05:19	15° $\mathring{B}$ 19'19	
evening set	2189 Jun 03 03:41	30° $\mathring{R}$ $\mathring{A}$		evening set	2195 Jul 03 18:49	12° $\mathring{B}$ 01'35	0°38'07
conjunction	2189 Jul 02 00:44	29° $\mathring{A}$ 19'58		conjunction	2195 Jul 03 23:03	12° $\mathring{B}$ 00'48	9.05463 AU
minimum elong	2189 Jul 30 15:35	0° $\mathring{M}$		minimum elong	2195 Sep 12 14:15	8° $\mathring{B}$ 42'56	
max. Earth dist.	2189 Oct 14 19:21	6° $\mathring{M}$ 48'57		max. Earth dist.	2195 Dec 22 14:30	15° $\mathring{B}$ 43'50	
morning rise				morning rise			
retrograde	2189 Oct 31 18:48	8° $\mathring{M}$ 50'52	2°11'29	retrograde	2196 Jan 08 05:38	17° $\mathring{B}$ 40'50	0°18'04
opposition	2189 Oct 31 18:49	8° $\mathring{M}$ 50'52	2°11'29	opposition	2196 Jan 08 05:38	17° $\mathring{B}$ 40'50	0°18'04
min. Earth dist.	2189 Oct 31 18:50	8° $\mathring{M}$ 50'53	10.80304 AU	min. Earth dist.	2196 Jan 08 00:19	17° $\mathring{B}$ 39'16	11.04620 AU
direct	2189 Nov 17 14:01	10° $\mathring{M}$ 51'35		direct	2196 Jan 24 21:06	19° $\mathring{B}$ 37'56	
evening set	2189 Dec 26 06:30	15° $\mathring{M}$		evening set	2196 May 05 03:58	26° $\mathring{B}$ 40'56	
conjunction	2190 Feb 25 01:50	17° $\mathring{M}$ 59'29		conjunction	2196 Jul 14 22:16	23° $\mathring{B}$ 22'36	0°05'41
minimum elong	2190 Apr 30 15:11	15° $\mathring{R}$ $\mathring{M}$		minimum elong	2196 Jul 15 02:42	23° $\mathring{B}$ 21'47	9.03241 AU
max. Earth dist.	2190 May 04 20:02	14° $\mathring{M}$ 40'55	2°36'30	max. Earth dist.	2196 Sep 18 00:43	20° $\mathring{B}$ 05'45	
morning rise	2190 May 04 20:43	14° $\mathring{M}$ 40'48	8.84973 AU	morning rise	2196 Sep 23 11:56	20° $\mathring{B}$ 04'17	
retrograde	2190 Jul 14 17:48	11° $\mathring{M}$ 17'36		retrograde	2197 Jan 01 23:39	27° $\mathring{B}$ 05'00	
opposition	2190 Sep 23 04:30	15° $\mathring{M}$		opposition			
min. Earth dist.	2190 Oct 26 23:02	18° $\mathring{M}$ 39'22		min. Earth dist.			
direct				direct			
evening set				evening set			
conjunction	2190 Nov 12 19:34	20° $\mathring{M}$ 39'29	2°02'21	conjunction	2197 Jan 18 15:06	29° $\mathring{B}$ 02'29	0°-8'-48
minimum elong	2190 Nov 12 19:36	20° $\mathring{M}$ 39'29	2°02'21	minimum elong	2197 Jan 18 15:05	29° $\mathring{B}$ 02'29	0°08'49
max. Earth dist.	2190 Nov 12 18:01	20° $\mathring{M}$ 39'01	10.89022 AU	max. Earth dist.	2197 Jan 18 09:03	29° $\mathring{B}$ 00'43	
morning rise	2190 Nov 29 12:32	22° $\mathring{M}$ 38'34		morning rise	2197 Jan 18 21:08	29° $\mathring{B}$ 04'15	
					2197 Jan 18 10:10	29° $\mathring{B}$ 01'03	11.01335 AU
					2197 Jan 26 17:28	0° $\mathring{B}$	



morning rise	2197 Feb 04 07:31	1°≈00'17		morning rise	2203 Apr 19 00:38	13°Υ18'40	
retrograde	2197 May 17 07:23	8°≈07'41		retrograde	2203 Aug 03 10:20	21°Υ14'35	
opposition	2197 Jul 27 03:27	4°≈48'30	0°-27'-13	opposition	2203 Oct 11 23:09	17°Υ47'33	-2°-45'-2
min. Earth dist.	2197 Jul 27 07:23	4°≈47'47	8.98894 AU	min. Earth dist.	2203 Oct 12 00:08	17°Υ47'21	8.40795 AU
direct	2197 Oct 05 08:33	1°≈30'19		direct	2203 Dec 18 06:59	14°Υ25'10	
evening set	2198 Jan 13 11:31	8°≈32'19		evening set	2204 Mar 28 00:19	22°Υ02'22	
conjunction	2198 Jan 30 03:32	10°≈30'35	0°-35'-27	conjunction	2204 Apr 14 05:53	24°Υ12'17	-2°-14'-24
minimum elong	2198 Jan 30 03:31	10°≈30'35	0°35'28	minimum elong	2204 Apr 14 05:53	24°Υ12'17	2°14'25
max. Earth dist.	2198 Jan 29 23:04	10°≈29'16	10.95959 AU	max. Earth dist.	2204 Apr 14 04:15	24°Υ11'45	10.35126 AU
morning rise	2198 Feb 15 21:08	12°≈29'25		morning rise	2204 May 01 16:10	26°Υ23'41	
	2198 Mar 10 09:46	15°≈			2204 Jun 01 16:32	0°Ϡ	
retrograde	2198 May 29 15:07	19°≈42'35		retrograde	2204 Aug 16 10:36	4°Ϡ27'53	
opposition	2198 Aug 08 11:22	16°≈22'22	0°-59'-26	opposition	2204 Oct 24 12:46	0°Ϡ59'40	-2°-45'-54
min. Earth dist.	2198 Aug 08 15:02	16°≈21'41	8.92532 AU	min. Earth dist.	2204 Oct 24 13:05	0°Ϡ59'36	8.29934 AU
	2198 Aug 27 11:30	15°≈			2204 Nov 06 03:56	30°ϠΥ	
direct	2198 Oct 17 06:03	13°≈04'02		direct	2204 Dec 30 11:58	27°Υ36'00	
	2198 Dec 05 00:11	15°≈			2205 Feb 20 19:50	0°Ϡ	
evening set	2199 Jan 25 03:38	20°≈08'49		evening set	2205 Apr 10 17:43	5°Ϡ21'27	
conjunction	2199 Feb 10 20:25	22°≈08'13	-1°-1'00	conjunction	2205 Apr 28 03:41	7°Ϡ34'05	-2°-11'-15
minimum elong	2199 Feb 10 20:23	22°≈08'12	1°01'00	minimum elong	2205 Apr 28 03:42	7°Ϡ34'06	2°11'16
max. Earth dist.	2199 Feb 10 15:11	22°≈06'39	10.88641 AU	max. Earth dist.	2205 Apr 28 03:03	7°Ϡ33'53	10.24777 AU
morning rise	2199 Feb 27 15:44	24°≈08'25		morning rise	2205 May 15 18:20	9°Ϡ48'11	
	2199 Apr 29 01:59	0°Ϡ			2205 Jul 01 07:59	15°Ϡ	
retrograde	2199 Jun 11 05:30	1°Ϡ28'39		retrograde	2205 Aug 30 16:45	17°Ϡ59'17	
	2199 Jul 25 08:21	30°≈			2205 Nov 01 03:17	15°≈	
opposition	2199 Aug 20 23:05	28°≈07'13	-1°-29'-44	opposition	2205 Nov 07 07:31	14°Ϡ30'09	-2°-37'-43
min. Earth dist.	2199 Aug 21 03:16	28°≈06'26	8.84333 AU	min. Earth dist.	2205 Nov 07 07:11	14°Ϡ30'13	8.20246 AU
direct	2199 Oct 29 06:04	24°≈48'29		direct	2206 Jan 12 23:54	11°Ϡ05'12	
	2200 Jan 19 23:21	0°Ϡ			2206 Mar 21 21:11	15°Ϡ	
evening set	2200 Feb 06 01:14	1°Ϡ57'31		evening set	2206 Apr 24 20:18	18°Ϡ58'30	
conjunction	2200 Feb 22 19:19	3°Ϡ58'24	-1°-24'-22	conjunction	2206 May 12 11:06	21°Ϡ13'47	-2°00'-44
minimum elong	2200 Feb 22 19:17	3°Ϡ58'24	1°24'23	minimum elong	2206 May 12 11:09	21°Ϡ13'48	2°00'45
max. Earth dist.	2200 Feb 22 13:33	3°Ϡ56'39	10.79596 AU	max. Earth dist.	2206 May 12 12:18	21°Ϡ14'10	10.15897 AU
morning rise	2200 Mar 11 16:48	6°Ϡ00'19		morning rise	2206 May 30 06:08	23°Ϡ30'25	
retrograde	2200 Jun 24 00:39	13°Ϡ28'46			2206 Jul 30 16:13	0°Π	
opposition	2200 Sep 02 15:12	10°Ϡ06'00	-1°-56'-49	retrograde	2206 Sep 14 03:21	1°Π46'32	
min. Earth dist.	2200 Sep 02 19:35	10°Ϡ05'10	8.74571 AU		2206 Oct 30 04:49	30°≈	
direct	2200 Nov 10 09:55	6°Ϡ46'38		opposition	2206 Nov 21 06:28	28°Ϡ16'47	-2°-20'-20
evening set	2201 Feb 18 05:56	14°Ϡ01'20		min. Earth dist.	2206 Nov 21 04:56	28°Ϡ17'06	8.12281 AU
				direct	2207 Jan 26 18:37	24°Ϡ50'35	
conjunction	2201 Mar 07 01:59	16°Ϡ04'04	-1°-44'-29		2207 Apr 15 20:46	0°Π	
minimum elong	2201 Mar 07 01:57	16°Ϡ04'03	1°44'30	evening set	2207 May 09 07:34	2°Π50'55	
max. Earth dist.	2201 Mar 06 20:59	16°Ϡ02'32	10.69186 AU				
morning rise	2201 Mar 24 01:52	18°Ϡ07'59		conjunction	2207 May 27 03:13	5°Π08'36	-1°-43'-5
retrograde	2201 Jul 07 03:31	25°Ϡ45'27		minimum elong	2207 May 27 03:16	5°Π08'37	1°43'06
opposition	2201 Sep 15 12:12	22°Ϡ21'14	-2°-19'-18	max. Earth dist.	2207 May 27 06:17	5°Π09'36	10.09000 AU
min. Earth dist.	2201 Sep 15 15:49	22°Ϡ20'32	8.63694 AU	morning rise	2207 Jun 14 02:15	7°Π27'23	
direct	2201 Nov 22 20:04	19°Ϡ01'02		retrograde	2207 Sep 28 16:22	15°Π46'09	
evening set	2202 Mar 02 18:47	26°Ϡ22'32		opposition	2207 Dec 05 08:19	12°Π16'09	-1°-54'-23
				min. Earth dist.	2207 Dec 05 05:26	12°Π16'44	8.06509 AU
conjunction	2202 Mar 19 17:25	28°Ϡ27'25	-2°00'-13	direct	2208 Feb 09 20:03	8°Π48'48	
minimum elong	2202 Mar 19 17:23	28°Ϡ27'24	2°00'14	evening set	2208 May 23 01:58	16°Π54'58	
max. Earth dist.	2202 Mar 19 13:58	28°Ϡ26'21	10.57920 AU				
	2202 Apr 01 05:40	0°Υ		conjunction	2208 Jun 10 01:50	19°Π14'31	-1°-19'-6
morning rise	2202 Apr 05 20:09	0°Υ33'37		minimum elong	2208 Jun 10 01:53	19°Π14'32	1°19'07
retrograde	2202 Jul 20 15:24	8°Υ20'26		max. Earth dist.	2208 Jun 10 06:30	19°Π16'02	10.04499 AU
opposition	2202 Sep 28 14:51	4°Υ54'46	-2°-35'-48	morning rise	2208 Jun 28 03:59	21°Π34'51	
min. Earth dist.	2202 Sep 28 16:55	4°Υ54'21	8.52245 AU	retrograde	2208 Oct 12 05:29	29°Π53'47	
direct	2202 Dec 05 10:36	1°Υ33'33		opposition	2208 Dec 18 12:06	26°Π23'53	-1°-21'-15
evening set	2203 Mar 15 16:38	9°Υ02'38		min. Earth dist.	2208 Dec 18 08:00	26°Π24'44	8.03287 AU
				direct	2209 Feb 23 01:49	22°Π55'35	
conjunction	2203 Apr 01 18:25	11°Υ09'55	-2°-10'-30		2209 May 29 07:49	0°Ϡ	
minimum elong	2203 Apr 01 18:24	11°Υ09'55	2°10'31	evening set	2209 Jun 07 01:16	1°Ϡ05'57	
max. Earth dist.	2203 Apr 01 16:04	11°Υ09'11	10.46371 AU				



conjunction	2209 Jun 25 04:09	3° <del>5</del> 26'38	0°-50'-12	minimum elong	2215 Sep 19 19:06	26° <del>7</del> 09'18	1°57'13
minimum elong	2209 Jun 25 04:12	3° <del>5</del> 26'39	0°50'12	max. Earth dist.	2215 Sep 19 23:46	26° <del>7</del> 10'46	10.43026 AU
max. Earth dist.	2209 Jun 25 10:02	3° <del>5</del> 28'33	10.02677 AU	morning rise	2215 Oct 07 04:29	28° <del>7</del> 18'49	
morning rise	2209 Jul 13 08:08	5° <del>5</del> 47'42			2215 Oct 21 07:22	0° <del>5</del>	
retrograde	2209 Oct 26 17:33	14° <del>5</del> 04'21		retrograde	2216 Jan 15 21:41	5° <del>5</del> 51'18	
opposition	2210 Jan 01 16:17	10° <del>5</del> 34'57	0°-42'-59	opposition	2216 Mar 23 03:53	2° <del>5</del> 29'30	2°33'00
min. Earth dist.	2210 Jan 01 11:29	10° <del>5</del> 35'57	8.02834 AU	min. Earth dist.	2216 Mar 23 00:24	2° <del>5</del> 30'11	8.48841 AU
direct	2210 Mar 09 10:29	7° <del>5</del> 05'54			2216 Apr 27 15:36	30° <del>8</del>	
evening set	2210 Jun 22 03:10	15° <del>5</del> 18'36		direct	2216 May 31 17:35	29° <del>7</del> 02'33	
					2216 Jul 04 15:37	0° <del>5</del>	
conjunction	2210 Jul 10 07:34	17° <del>5</del> 39'34	0°-18'-13	evening set	2216 Sep 14 18:38	6° <del>5</del> 51'14	
minimum elong	2210 Jul 10 07:35	17° <del>5</del> 39'34	0°18'14				
max. Earth dist.	2210 Jul 10 13:48	17° <del>5</del> 41'35	10.03662 AU	conjunction	2216 Oct 02 03:51	8° <del>5</del> 59'15	2°09'05
morning rise	2210 Jul 28 11:48	20° <del>5</del> 00'28		minimum elong	2216 Oct 02 03:49	8° <del>5</del> 59'14	2°09'06
retrograde	2210 Nov 10 02:30	28° <del>5</del> 12'34		max. Earth dist.	2216 Oct 02 07:26	9° <del>5</del> 00'21	10.54515 AU
opposition	2211 Jan 15 19:22	24° <del>5</del> 44'01	0°-2'-12	morning rise	2216 Oct 19 08:15	11° <del>5</del> 05'50	
min. Earth dist.	2211 Jan 15 14:38	24° <del>5</del> 44'59	8.05192 AU	retrograde	2217 Jan 27 12:50	18° <del>5</del> 30'08	
asc. node	2211 Feb 05 04:21	23° <del>5</del> 06'57		opposition	2217 Apr 05 04:45	15° <del>5</del> 09'38	2°43'20
direct	2211 Mar 23 20:45	21° <del>5</del> 14'31		min. Earth dist.	2217 Apr 05 02:43	15° <del>5</del> 10'02	8.60366 AU
evening set	2211 Jul 07 04:54	29° <del>5</del> 27'35		direct	2217 Jun 14 06:09	11° <del>5</del> 43'49	
	2211 Jul 11 10:39	0° <del>9</del>		evening set	2217 Sep 27 21:34	19° <del>5</del> 24'33	
conjunction	2211 Jul 25 09:04	1° <del>9</del> 47'53	0°14'45	conjunction	2217 Oct 15 02:17	21° <del>5</del> 29'49	2°14'31
minimum elong	2211 Jul 25 09:03	1° <del>9</del> 47'52	0°14'46	minimum elong	2217 Oct 15 02:16	21° <del>5</del> 29'49	2°14'30
behind sun begin	2211 Jul 25 06:23	1° <del>9</del> 47'01		max. Earth dist.	2217 Oct 15 04:00	21° <del>5</del> 30'21	10.65870 AU
behind sun end	2211 Jul 25 11:42	1° <del>9</del> 48'43		morning rise	2217 Nov 01 02:31	23° <del>5</del> 33'45	
max. Earth dist.	2211 Jul 25 14:59	1° <del>9</del> 49'47	10.07393 AU		2218 Jan 08 19:15	0° <del>7</del>	
morning rise	2211 Aug 12 11:53	4° <del>9</del> 07'42		retrograde	2218 Feb 08 22:00	0° <del>7</del> 50'38	
retrograde	2211 Nov 24 06:29	12° <del>9</del> 13'27			2218 Mar 12 13:14	30° <del>8</del>	
opposition	2212 Jan 29 20:09	8° <del>9</del> 46'02	0°38'20	opposition	2218 Apr 18 00:15	27° <del>5</del> 31'15	2°45'47
min. Earth dist.	2212 Jan 29 15:38	8° <del>9</del> 46'58	8.10213 AU	min. Earth dist.	2218 Apr 17 23:37	27° <del>5</del> 31'23	8.71451 AU
direct	2212 Apr 06 08:02	5° <del>9</del> 16'25		direct	2218 Jun 27 11:34	24° <del>5</del> 06'37	
evening set	2212 Jul 21 03:29	13° <del>9</del> 27'51			2218 Sep 26 06:38	0° <del>7</del>	
	2212 Aug 02 04:47	15° <del>9</del>		evening set	2218 Oct 10 14:34	1° <del>7</del> 39'22	
conjunction	2212 Aug 08 05:40	15° <del>9</del> 46'35	0°46'28	conjunction	2218 Oct 27 15:23	3° <del>7</del> 42'13	2°13'40
minimum elong	2212 Aug 08 05:38	15° <del>9</del> 46'35	0°46'29	minimum elong	2218 Oct 27 15:24	3° <del>7</del> 42'14	2°13'39
max. Earth dist.	2212 Aug 08 11:11	15° <del>9</del> 48'22	10.13631 AU	max. Earth dist.	2218 Oct 27 15:02	3° <del>7</del> 42'07	10.76510 AU
morning rise	2212 Aug 26 05:28	18° <del>9</del> 04'32		morning rise	2218 Nov 13 12:08	5° <del>7</del> 43'51	
retrograde	2212 Dec 07 02:09	26° <del>9</del> 02'40		retrograde	2219 Feb 21 01:17	12° <del>7</del> 54'21	
opposition	2213 Feb 11 17:20	22° <del>9</del> 36'35	1°16'02	opposition	2219 Apr 30 14:47	9° <del>7</del> 35'52	2°40'48
min. Earth dist.	2213 Feb 11 12:56	22° <del>9</del> 37'29	8.17585 AU	min. Earth dist.	2219 Apr 30 14:59	9° <del>7</del> 35'50	8.81527 AU
direct	2213 Apr 20 18:22	19° <del>9</del> 07'13		direct	2219 Jul 10 10:13	6° <del>7</del> 12'26	
evening set	2213 Aug 04 20:22	27° <del>9</del> 15'07		evening set	2219 Oct 22 22:23	13° <del>7</del> 37'34	
					2219 Nov 03 12:01	15° <del>7</del>	
conjunction	2213 Aug 22 19:16	29° <del>9</del> 31'36	1°15'05	conjunction	2219 Nov 08 20:09	15° <del>7</del> 38'26	2°06'58
minimum elong	2213 Aug 22 19:13	29° <del>9</del> 31'35	1°15'05	minimum elong	2219 Nov 08 20:10	15° <del>7</del> 38'26	2°06'57
max. Earth dist.	2213 Aug 23 00:19	29° <del>9</del> 33'13	10.21999 AU	max. Earth dist.	2219 Nov 08 18:44	15° <del>7</del> 38'00	10.85895 AU
	2213 Aug 26 12:16	0° <del>7</del>		morning rise	2219 Nov 25 14:08	17° <del>7</del> 38'12	
morning rise	2213 Sep 09 14:50	1° <del>7</del> 47'01		retrograde	2220 Mar 04 01:45	24° <del>7</del> 43'39	
retrograde	2213 Dec 20 15:01	9° <del>7</del> 36'48		opposition	2220 May 12 01:19	21° <del>7</del> 25'51	2°29'02
opposition	2214 Feb 25 09:58	6° <del>7</del> 12'08	1°48'40	min. Earth dist.	2220 May 12 02:22	21° <del>7</del> 25'39	8.90103 AU
min. Earth dist.	2214 Feb 25 05:26	6° <del>7</del> 13'03	8.26859 AU	direct	2220 Jul 22 02:54	18° <del>7</del> 03'35	
direct	2214 May 05 00:01	2° <del>7</del> 43'20		evening set	2220 Nov 02 22:17	25° <del>7</del> 21'51	
evening set	2214 Aug 19 05:24	10° <del>7</del> 46'01					
conjunction	2214 Sep 06 00:07	12° <del>7</del> 59'50	1°39'00	conjunction	2220 Nov 19 17:43	27° <del>7</del> 21'10	1°55'01
minimum elong	2214 Sep 06 00:04	12° <del>7</del> 59'49	1°39'01	minimum elong	2220 Nov 19 17:46	27° <del>7</del> 21'11	1°55'01
max. Earth dist.	2214 Sep 06 04:58	13° <del>7</del> 01'22	10.31992 AU	max. Earth dist.	2220 Nov 19 15:31	27° <del>7</del> 20'31	10.93605 AU
morning rise	2214 Sep 23 14:43	15° <del>7</del> 12'21		morning rise	2220 Dec 06 09:46	29° <del>7</del> 19'33	
retrograde	2215 Jan 02 21:57	22° <del>7</del> 53'26			2220 Dec 12 05:49	0° <del>7</del>	
opposition	2215 Mar 10 21:36	19° <del>7</del> 30'13	2°14'39	retrograde	2221 Mar 15 23:40	6° <del>7</del> 21'22	
min. Earth dist.	2215 Mar 10 17:12	19° <del>7</del> 31'06	8.37475 AU	opposition	2221 May 24 08:36	3° <del>7</del> 04'02	2°11'21
direct	2215 May 18 23:54	16° <del>7</del> 02'16		min. Earth dist.	2221 May 24 11:06	3° <del>7</del> 03'34	8.96854 AU
evening set	2215 Sep 02 05:09	23° <del>7</del> 58'24			2221 Jul 15 13:08	30° <del>7</del>	
				direct	2221 Aug 03 11:57	29° <del>7</del> 42'50	
conjunction	2215 Sep 19 19:09	26° <del>7</del> 09'19	1°57'12		2221 Aug 22 08:31	0° <del>7</del>	



evening set	2221 Nov 14 16:14	6°♂55'16			2228 Jan 18 20:44	15°♂	
				evening set	2228 Jan 21 10:06	15°♂17'54	
conjunction	2221 Dec 01 09:50	8°♂53'26	1°38'31				
minimum elong	2221 Dec 01 09:52	8°♂53'27	1°38'32	conjunction	2228 Feb 07 02:36	17°♂17'02	0°-50'-3
max. Earth dist.	2221 Dec 01 05:55	8°♂52'16	10.99396 AU	minimum elong	2228 Feb 07 02:34	17°♂17'01	0°50'03
morning rise	2221 Dec 18 00:48	10°♂50'53		max. Earth dist.	2228 Feb 06 20:55	17°♂15'20	10.89742 AU
retrograde	2222 Mar 27 18:06	17°♂50'30		morning rise	2228 Feb 23 21:18	19°♂16'50	
opposition	2222 Jun 05 13:26	14°♂33'21	1°48'38	retrograde	2228 Jun 06 01:10	26°♂34'39	
min. Earth dist.	2222 Jun 05 17:35	14°♂32'35	9.01603 AU	opposition	2228 Aug 15 20:55	23°♂13'06	-1°-16'-54
direct	2222 Aug 15 17:07	11°♂13'01		min. Earth dist.	2228 Aug 16 01:16	23°♂12'17	8.85751 AU
evening set	2222 Nov 26 05:32	18°♂20'45		direct	2228 Oct 24 10:35	19°♂53'54	
				evening set	2229 Feb 01 05:20	27°♂01'48	
conjunction	2222 Dec 12 21:50	20°♂18'10	1°18'15				
minimum elong	2222 Dec 12 21:52	20°♂18'11	1°18'15	conjunction	2229 Feb 17 23:04	29°♂02'17	-1°-14'-33
max. Earth dist.	2222 Dec 12 16:20	20°♂16'33	11.03130 AU	minimum elong	2229 Feb 17 23:01	29°♂02'16	1°14'33
morning rise	2222 Dec 29 12:26	22°♂15'06		max. Earth dist.	2229 Feb 17 18:26	29°♂00'53	10.81363 AU
retrograde	2223 Apr 08 13:18	29°♂14'02			2229 Feb 25 22:18	0°♂	
opposition	2223 Jun 17 16:57	25°♂56'45	1°21'51	morning rise	2229 Mar 06 19:32	1°♂03'39	
min. Earth dist.	2223 Jun 17 21:40	25°♂55'53	9.04238 AU	retrograde	2229 Jun 18 19:06	8°♂29'15	
direct	2223 Aug 27 20:08	22°♂37'07		opposition	2229 Aug 28 11:14	5°♂06'25	-1°-45'-36
evening set	2223 Dec 07 15:32	29°♂41'18		min. Earth dist.	2229 Aug 28 14:33	5°♂05'47	8.76683 AU
	2223 Dec 10 08:09	0°♂		direct	2229 Nov 05 11:45	1°♂46'44	
				evening set	2230 Feb 13 07:02	8°♂59'41	
conjunction	2223 Dec 24 07:12	1°♂38'22	0°55'00				
minimum elong	2223 Dec 24 07:14	1°♂38'23	0°55'00	conjunction	2230 Mar 02 02:16	11°♂01'49	-1°-36'-15
max. Earth dist.	2223 Dec 24 01:35	1°♂36'43	11.04708 AU	minimum elong	2230 Mar 02 02:14	11°♂01'48	1°36'16
morning rise	2224 Jan 09 21:51	3°♂35'11		max. Earth dist.	2230 Mar 01 22:01	11°♂00'31	10.71648 AU
retrograde	2224 Apr 19 08:59	10°♂34'55		morning rise	2230 Mar 19 01:00	13°♂05'03	
opposition	2224 Jun 28 19:51	7°♂17'12	0°51'59	retrograde	2230 Jul 01 19:41	20°♂39'21	
min. Earth dist.	2224 Jun 29 00:17	7°♂16'23	9.04690 AU	opposition	2230 Sep 10 06:30	17°♂15'10	-2°-10'-17
direct	2224 Sep 07 19:07	3°♂58'04		min. Earth dist.	2230 Sep 10 09:14	17°♂14'39	8.66477 AU
evening set	2224 Dec 18 00:12	11°♂00'03		direct	2230 Nov 17 19:00	13°♂54'50	
				evening set	2231 Feb 25 16:30	21°♂14'02	
conjunction	2225 Jan 03 15:39	12°♂57'08	0°29'39				
minimum elong	2225 Jan 03 15:40	12°♂57'08	0°29'39	conjunction	2231 Mar 14 13:51	23°♂18'09	-1°-54'-2
max. Earth dist.	2225 Jan 03 10:24	12°♂55'35	11.04086 AU	minimum elong	2231 Mar 14 13:49	23°♂18'08	1°54'03
morning rise	2225 Jan 20 06:42	14°♂54'10		max. Earth dist.	2231 Mar 14 09:47	23°♂16'53	10.61010 AU
retrograde	2225 May 01 07:52	21°♂56'13		morning rise	2231 Mar 31 15:25	25°♂23'33	
opposition	2225 Jul 10 22:58	18°♂37'50	0°20'04		2231 May 13 00:07	0°♂	
min. Earth dist.	2225 Jul 11 03:37	18°♂36'58	9.02960 AU	retrograde	2231 Jul 15 04:00	3°♂07'01	
direct	2225 Sep 19 16:30	15°♂18'59			2231 Sep 19 07:41	30°♂	
evening set	2225 Dec 29 09:11	22°♂20'13		opposition	2231 Sep 23 07:10	29°♂41'31	-2°-29'-34
				min. Earth dist.	2231 Sep 23 09:36	29°♂41'03	8.55580 AU
conjunction	2226 Jan 15 00:36	24°♂17'39	0°03'07	direct	2231 Nov 30 07:04	26°♂20'21	
minimum elong	2226 Jan 15 00:35	24°♂17'39	0°03'06		2232 Feb 04 23:21	0°♂	
behind sun begin	2226 Jan 14 17:38	24°♂15'37		evening set	2232 Mar 09 10:39	3°♂46'46	
behind sun end	2226 Jan 15 07:32	24°♂19'41					
max. Earth dist.	2226 Jan 14 18:34	24°♂15'54	11.01303 AU	conjunction	2232 Mar 26 10:55	5°♂53'10	-2°-6'-48
morning rise	2226 Jan 31 16:33	26°♂15'17		minimum elong	2232 Mar 26 10:54	5°♂53'09	2°06'49
desc. node	2226 Feb 26 14:51	29°♂05'50		max. Earth dist.	2232 Mar 26 08:14	5°♂52'19	10.49923 AU
	2226 Mar 07 21:28	0°♂		morning rise	2232 Apr 12 15:46	8°♂00'59	
retrograde	2226 May 13 08:58	3°♂21'08		retrograde	2232 Jul 27 19:10	15°♂53'39	
opposition	2226 Jul 23 03:41	0°♂01'53	0°-12'-48	opposition	2232 Oct 05 13:25	12°♂26'55	-2°-42'-4
min. Earth dist.	2226 Jul 23 08:56	0°♂00'55	8.99122 AU	min. Earth dist.	2232 Oct 05 14:50	12°♂26'38	8.44489 AU
	2226 Jul 23 13:52	30°♂		direct	2232 Dec 12 01:58	9°♂04'48	
direct	2226 Oct 01 11:51	26°♂43'07		evening set	2233 Mar 22 14:21	16°♂39'07	
	2226 Dec 05 15:56	0°♂					
evening set	2227 Jan 09 19:54	3°♂45'05		conjunction	2233 Apr 08 18:15	18°♂48'01	-2°-13'-32
				minimum elong	2233 Apr 08 18:14	18°♂48'01	2°13'34
conjunction	2227 Jan 26 11:34	5°♂43'11	0°-23'-51	max. Earth dist.	2233 Apr 08 17:33	18°♂47'48	10.38913 AU
minimum elong	2227 Jan 26 11:33	5°♂43'11	0°23'52	morning rise	2233 Apr 26 02:43	20°♂58'24	
max. Earth dist.	2227 Jan 26 05:02	5°♂41'15	10.96465 AU	retrograde	2233 Aug 10 16:55	28°♂59'45	
morning rise	2227 Feb 12 04:49	7°♂41'45		opposition	2233 Oct 19 01:12	25°♂31'55	-2°-46'-36
retrograde	2227 May 25 13:11	14°♂52'55		min. Earth dist.	2233 Oct 19 01:01	25°♂31'57	8.33755 AU
opposition	2227 Aug 04 10:46	11°♂32'35	0°-45'-32	direct	2233 Dec 25 04:47	22°♂08'48	
min. Earth dist.	2227 Aug 04 16:06	11°♂31'36	8.93319 AU	evening set	2234 Apr 05 03:55	29°♂51'14	
direct	2227 Oct 13 10:25	8°♂13'41			2234 Apr 06 08:00	0°♂	



conjunction	2234 Apr 22 12:03	2°♄02'49	-2°-13'-26	behind sun end	2240 Jul 18 16:32	26°♄06'06	
minimum elong	2234 Apr 22 12:03	2°♄02'49	2°13'28	max. Earth dist.	2240 Jul 18 14:47	26°♄05'32	10.06700 AU
max. Earth dist.	2234 Apr 22 13:23	2°♄03'14	10.28568 AU	morning rise	2240 Aug 05 12:46	28°♄24'01	
morning rise	2234 May 10 00:37	4°♄15'50			2240 Aug 18 09:25	0°♄	
retrograde	2234 Aug 24 22:33	12°♄24'44		retrograde	2240 Nov 17 15:59	6°♄32'27	
opposition	2234 Nov 01 18:21	8°♄56'02	-2°-42'-17	opposition	2241 Jan 23 06:59	3°♄05'01	0°21'25
min. Earth dist.	2234 Nov 01 16:30	8°♄56'24	8.23968 AU	min. Earth dist.	2241 Jan 23 02:13	3°♄06'00	8.08842 AU
direct	2235 Jan 07 12:55	5°♄31'51			2241 Mar 10 14:41	30°♄	
evening set	2235 Apr 19 03:11	13°♄22'12		direct	2241 Mar 31 14:31	29°♄35'56	
	2235 May 01 22:31	15°♄			2241 Apr 21 13:45	0°♄	
				evening set	2241 Jul 15 04:59	7°♄48'04	
conjunction	2235 May 06 15:58	15°♄36'26	-2°-6'-3				
minimum elong	2235 May 06 16:00	15°♄36'26	2°06'04	conjunction	2241 Aug 02 08:19	10°♄07'29	0°33'21
max. Earth dist.	2235 May 06 18:43	15°♄37'19	10.19473 AU	minimum elong	2241 Aug 02 08:17	10°♄07'28	0°33'21
morning rise	2235 May 24 08:58	17°♄52'03		max. Earth dist.	2241 Aug 02 14:12	10°♄09'22	10.11603 AU
retrograde	2235 Sep 08 09:11	26°♄06'40		morning rise	2241 Aug 20 09:27	12°♄26'13	
opposition	2235 Nov 15 16:08	22°♄37'24	-2°-28'-44		2241 Sep 10 11:32	15°♄	
min. Earth dist.	2235 Nov 15 13:13	22°♄38'00	8.15686 AU	retrograde	2241 Dec 01 16:07	20°♄27'43	
direct	2236 Jan 21 04:16	19°♄12'07		opposition	2242 Feb 06 06:01	17°♄01'25	1°00'37
evening set	2236 May 02 11:39	27°♄09'46		min. Earth dist.	2242 Feb 06 01:22	17°♄02'22	8.14921 AU
					2242 Mar 04 17:19	15°♄	
conjunction	2236 May 20 05:08	29°♄26'27	-1°-51'-20	direct	2242 Apr 15 00:44	13°♄32'19	
minimum elong	2236 May 20 05:11	29°♄26'28	1°51'21		2242 May 26 00:05	15°♄	
max. Earth dist.	2236 May 20 08:43	29°♄27'37	10.12155 AU	evening set	2242 Jul 30 00:55	21°♄41'49	
	2236 May 24 12:53	0°♄					
morning rise	2236 Jun 07 02:24	1°♄44'22		conjunction	2242 Aug 17 01:30	23°♄59'19	1°03'30
retrograde	2236 Sep 21 22:23	10°♄02'26		minimum elong	2242 Aug 17 01:28	23°♄59'18	1°03'30
opposition	2236 Nov 28 17:23	6°♄32'55	-2°-6'-15	max. Earth dist.	2242 Aug 17 07:02	24°♄01'05	10.18759 AU
min. Earth dist.	2236 Nov 28 14:01	6°♄33'36	8.09399 AU	morning rise	2242 Sep 03 22:52	26°♄15'49	
direct	2237 Feb 03 03:13	3°♄06'32			2242 Oct 05 20:38	0°♄	
evening set	2237 May 17 03:40	11°♄10'22		retrograde	2242 Dec 15 09:16	4°♄09'17	
				opposition	2243 Feb 20 00:52	0°♄44'14	1°35'38
conjunction	2237 Jun 04 01:33	13°♄29'06	-1°-29'-53	min. Earth dist.	2243 Feb 19 20:56	0°♄45'02	8.23078 AU
minimum elong	2237 Jun 04 01:37	13°♄29'07	1°29'54		2243 Mar 01 04:44	30°♄	
max. Earth dist.	2237 Jun 04 05:56	13°♄30'31	10.07045 AU	direct	2243 Apr 29 07:40	27°♄15'22	
morning rise	2237 Jun 22 02:29	15°♄48'46			2243 Jun 25 22:35	0°♄	
retrograde	2237 Oct 06 11:32	24°♄07'47		evening set	2243 Aug 13 13:55	5°♄20'27	
opposition	2237 Dec 12 20:58	20°♄38'20	-1°-35'-56				
min. Earth dist.	2237 Dec 12 17:14	20°♄39'06	8.05469 AU	conjunction	2243 Aug 31 10:32	7°♄35'27	1°29'34
direct	2238 Feb 17 08:25	17°♄10'57		minimum elong	2243 Aug 31 10:28	7°♄35'26	1°29'35
evening set	2238 Jun 01 01:15	25°♄19'25		max. Earth dist.	2243 Aug 31 15:02	7°♄36'53	10.27753 AU
				morning rise	2243 Sep 18 03:13	9°♄49'14	
conjunction	2238 Jun 19 02:46	27°♄39'34	-1°-2'-52	retrograde	2243 Dec 28 18:53	17°♄34'06	
minimum elong	2238 Jun 19 02:49	27°♄39'35	1°02'52	opposition	2244 Mar 04 14:57	14°♄10'21	2°04'36
max. Earth dist.	2238 Jun 19 07:40	27°♄41'09	10.04402 AU	min. Earth dist.	2244 Mar 04 11:58	14°♄10'57	8.32831 AU
morning rise	2238 Jul 07 06:14	0°♄00'17		direct	2244 May 12 10:46	10°♄42'00	
	2238 Jul 07 05:20	0°♄		evening set	2244 Aug 26 17:48	18°♄41'07	
retrograde	2238 Oct 20 23:37	8°♄17'48					
opposition	2238 Dec 27 01:19	4°♄48'43	0°-59'-34	conjunction	2244 Sep 13 09:43	20°♄53'17	1°50'18
min. Earth dist.	2238 Dec 26 21:23	4°♄49'32	8.04056 AU	minimum elong	2244 Sep 13 09:40	20°♄53'16	1°50'19
direct	2239 Mar 03 16:57	1°♄20'30		max. Earth dist.	2244 Sep 13 12:50	20°♄54'16	10.38060 AU
evening set	2239 Jun 16 02:29	9°♄31'59		morning rise	2244 Sep 30 21:24	23°♄04'07	
					2244 Dec 13 13:55	0°♄	
conjunction	2239 Jul 04 06:19	11°♄52'46	0°-31'-57	retrograde	2245 Jan 09 19:55	0°♄40'18	
minimum elong	2239 Jul 04 06:21	11°♄52'47	0°31'58		2245 Feb 06 08:51	30°♄	
max. Earth dist.	2239 Jul 04 11:28	11°♄54'26	10.04286 AU	opposition	2245 Mar 17 23:34	27°♄17'49	2°26'17
morning rise	2239 Jul 22 10:43	14°♄13'42		min. Earth dist.	2245 Mar 17 21:01	27°♄18'20	8.43613 AU
retrograde	2239 Nov 04 09:44	22°♄27'34		direct	2245 May 26 08:57	23°♄50'14	
opposition	2240 Jan 10 04:57	18°♄59'12	0°-19'-32		2245 Aug 26 03:02	0°♄	
min. Earth dist.	2240 Jan 10 00:37	19°♄00'05	8.05178 AU	evening set	2245 Sep 09 11:36	1°♄42'15	
direct	2240 Mar 17 03:25	15°♄30'24					
evening set	2240 Jun 30 04:42	23°♄43'12		conjunction	2245 Sep 26 22:47	3°♄51'31	2°04'55
asc. node	2240 Jul 08 16:52	24°♄48'33		minimum elong	2245 Sep 26 22:45	3°♄51'30	2°04'55
				max. Earth dist.	2245 Sep 27 01:00	3°♄52'12	10.49104 AU
conjunction	2240 Jul 18 09:11	26°♄03'45	0°00'52	morning rise	2245 Oct 14 05:29	5°♄59'24	
minimum elong	2240 Jul 18 09:10	26°♄03'45	0°00'53	retrograde	2246 Jan 22 13:16	13°♄27'12	
behind sun begin	2240 Jul 18 01:49	26°♄01'23		opposition	2246 Mar 31 02:24	10°♄05'54	2°40'03



min. Earth dist.	2246 Mar 31 00:09	10° $\overline{06}$ '20	8.54831 AU	min. Earth dist.	2252 Jun 11 23:12	21° $\overline{18}$ '24	9.03915 AU
direct	2246 Jun 09 01:01	6° $\overline{39}$ '15		direct	2252 Aug 22 01:37	17° $\overline{58}$ '52	
evening set	2246 Sep 22 18:53	14° $\overline{23}$ '31		evening set	2252 Dec 02 02:47	25° $\overline{03}$ '46	
conjunction	2246 Oct 10 01:36	16° $\overline{30}$ '00	2°13'04	conjunction	2252 Dec 18 18:43	27° $\overline{00}$ '49	1°05'23
minimum elong	2246 Oct 10 01:34	16° $\overline{29}$ '59	2°13'04	minimum elong	2252 Dec 18 18:45	27° $\overline{00}$ '49	1°05'23
max. Earth dist.	2246 Oct 10 03:20	16° $\overline{30}$ '32	10.60302 AU	max. Earth dist.	2252 Dec 18 15:09	26° $\overline{59}$ '45	11.05158 AU
morning rise	2246 Oct 27 03:40	18° $\overline{35}$ '06		morning rise	2253 Jan 04 09:11	28° $\overline{57}$ '29	
retrograde	2247 Feb 04 02:17	25° $\overline{55}$ '10			2253 Jan 13 13:21	0° $\overline{00}$ '00	
opposition	2247 Apr 12 23:54	22° $\overline{34}$ '55	2°45'49	retrograde	2253 Apr 14 14:43	5° $\overline{55}$ '54	
min. Earth dist.	2247 Apr 12 22:13	22° $\overline{35}$ '15	8.65914 AU	opposition	2253 Jun 23 23:03	2° $\overline{38}$ '26	1°05'15
direct	2247 Jun 22 08:07	19° $\overline{09}$ '22		min. Earth dist.	2253 Jun 24 02:40	2° $\overline{37}$ '46	9.05942 AU
evening set	2247 Oct 05 15:47	26° $\overline{45}$ '36			2253 Aug 04 11:02	30° $\overline{R}$ ' $\overline{18}$	
conjunction	2247 Oct 22 18:25	28° $\overline{49}$ '33	2°14'51	direct	2253 Sep 02 23:16	29° $\overline{19}$ '12	
minimum elong	2247 Oct 22 18:25	28° $\overline{49}$ '33	2°14'50		2253 Oct 02 02:40	0° $\overline{00}$ '00	
max. Earth dist.	2247 Oct 22 19:42	28° $\overline{49}$ '57	10.71110 AU	evening set	2253 Dec 13 11:19	6° $\overline{21}$ '12	
	2247 Nov 01 10:32	0° $\overline{M}$ '00		conjunction	2253 Dec 30 02:37	8° $\overline{18}$ '01	0°40'54
morning rise	2247 Nov 08 16:30	0° $\overline{M}$ '52'11		minimum elong	2253 Dec 30 02:38	8° $\overline{18}$ '02	0°40'53
retrograde	2248 Feb 16 08:10	8° $\overline{M}$ '05'25		max. Earth dist.	2253 Dec 29 21:41	8° $\overline{16}$ '34	11.06115 AU
opposition	2248 Apr 24 16:25	4° $\overline{M}$ '46'07	2°43'55	morning rise	2254 Jan 15 17:27	10° $\overline{14}$ '42	
min. Earth dist.	2248 Apr 24 16:03	4° $\overline{M}$ '46'11	8.76355 AU	retrograde	2254 Apr 26 10:19	17° $\overline{14}$ '37	
direct	2248 Jul 04 08:26	1° $\overline{M}$ '21'43		opposition	2254 Jul 06 01:12	13° $\overline{56}$ '49	0°34'10
evening set	2248 Oct 17 03:10	8° $\overline{M}$ '50'08		min. Earth dist.	2254 Jul 06 05:27	13° $\overline{56}$ '02	9.05774 AU
conjunction	2248 Nov 03 02:17	10° $\overline{M}$ '51'53	2°10'34	direct	2254 Sep 14 21:42	10° $\overline{38}$ '09	
minimum elong	2248 Nov 03 02:18	10° $\overline{M}$ '51'53	2°10'34	evening set	2254 Dec 24 19:15	17° $\overline{38}$ '39	
max. Earth dist.	2248 Nov 03 02:03	10° $\overline{M}$ '51'49	10.81062 AU	conjunction	2255 Jan 10 10:28	19° $\overline{35}$ '37	0°14'48
morning rise	2248 Nov 19 21:21	12° $\overline{M}$ '52'29		minimum elong	2255 Jan 10 10:29	19° $\overline{35}$ '37	0°14'48
	2248 Dec 08 13:34	15° $\overline{M}$ '00		behind sun begin	2255 Jan 10 07:29	19° $\overline{34}$ '45	
retrograde	2249 Feb 27 08:33	19° $\overline{M}$ '59'59		behind sun end	2255 Jan 10 13:29	19° $\overline{36}$ '29	
opposition	2249 May 07 04:17	16° $\overline{M}$ '41'28	2°34'56	max. Earth dist.	2255 Jan 10 05:40	19° $\overline{34}$ '13	11.04869 AU
min. Earth dist.	2249 May 07 05:18	16° $\overline{M}$ '41'17	8.85721 AU	morning rise	2255 Jan 27 01:57	21° $\overline{32}$ '41	
	2249 May 30 14:51	15° $\overline{R}$ ' $\overline{M}$ '00		retrograde	2255 May 08 10:09	28° $\overline{35}$ '37	
direct	2249 Jul 17 03:21	13° $\overline{M}$ '18'14		opposition	2255 Jul 18 04:24	25° $\overline{17}$ '12	0°01'40
	2249 Sep 01 14:15	15° $\overline{M}$ '00		min. Earth dist.	2255 Jul 18 08:09	25° $\overline{16}$ '31	9.03422 AU
evening set	2249 Oct 29 06:04	20° $\overline{M}$ '39'22		desc. node	2255 Aug 06 07:05	23° $\overline{55}$ '10	
conjunction	2249 Nov 15 02:23	22° $\overline{M}$ '39'20	2°00'47	direct	2255 Sep 26 18:06	21° $\overline{58}$ '55	
minimum elong	2249 Nov 15 02:25	22° $\overline{M}$ '39'21	2°00'47	evening set	2256 Jan 05 04:16	28° $\overline{59}$ '19	
max. Earth dist.	2249 Nov 15 00:26	22° $\overline{M}$ '38'45	10.89753 AU		2256 Jan 13 19:48	0° $\overline{\approx}$ '00	
morning rise	2249 Dec 01 19:21	24° $\overline{M}$ '38'18		conjunction	2256 Jan 21 19:46	0° $\overline{\approx}$ '56'46	0°-12'-3
	2250 Jan 25 00:14	0° $\overline{\approx}$ '00		minimum elong	2256 Jan 21 19:46	0° $\overline{\approx}$ '56'46	0°12'04
retrograde	2250 Mar 11 05:55	1° $\overline{\approx}$ '41'22		behind sun begin	2256 Jan 21 14:56	0° $\overline{\approx}$ '55'21	
	2250 Apr 27 01:57	30° $\overline{R}$ ' $\overline{M}$ '00		behind sun end	2256 Jan 22 00:36	0° $\overline{\approx}$ '58'11	
opposition	2250 May 19 12:21	28° $\overline{M}$ '23'27	2°19'40	max. Earth dist.	2256 Jan 21 15:29	0° $\overline{\approx}$ '55'31	11.01453 AU
min. Earth dist.	2250 May 19 14:01	28° $\overline{M}$ '23'08	8.93625 AU	morning rise	2256 Feb 07 12:10	2° $\overline{\approx}$ '54'33	
direct	2250 Jul 29 15:44	25° $\overline{M}$ '01'23		retrograde	2256 May 19 13:14	10° $\overline{\approx}$ '02'00	
	2250 Oct 20 18:34	0° $\overline{\approx}$ '00		opposition	2256 Jul 29 09:30	6° $\overline{\approx}$ '42'45	0°-31'-8
evening set	2250 Nov 10 01:53	2° $\overline{\approx}$ '16'02		min. Earth dist.	2256 Jul 29 13:01	6° $\overline{\approx}$ '42'06	8.98955 AU
conjunction	2250 Nov 26 20:11	4° $\overline{\approx}$ '14'38	1°46'09	direct	2256 Oct 07 13:51	3° $\overline{\approx}$ '24'35	
minimum elong	2250 Nov 26 20:13	4° $\overline{\approx}$ '14'38	1°46'09	evening set	2257 Jan 15 16:13	10° $\overline{\approx}$ '26'24	
max. Earth dist.	2250 Nov 26 17:34	4° $\overline{\approx}$ '13'51	10.96830 AU	conjunction	2257 Feb 01 08:11	12° $\overline{\approx}$ '24'40	0°-38'-34
morning rise	2250 Dec 13 11:39	6° $\overline{\approx}$ '12'24		minimum elong	2257 Feb 01 08:10	12° $\overline{\approx}$ '24'39	0°38'35
retrograde	2251 Mar 23 00:56	13° $\overline{\approx}$ '12'27		max. Earth dist.	2257 Feb 01 03:21	12° $\overline{\approx}$ '23'14	10.95971 AU
opposition	2251 May 31 17:30	9° $\overline{\approx}$ '54'54	1°59'00	morning rise	2257 Feb 18 01:56	14° $\overline{\approx}$ '23'30	
min. Earth dist.	2251 May 31 19:11	9° $\overline{\approx}$ '54'35	8.99761 AU		2257 Feb 23 08:13	15° $\overline{\approx}$ '00	
direct	2251 Aug 10 23:07	6° $\overline{\approx}$ '33'56		retrograde	2257 May 31 21:25	21° $\overline{\approx}$ '36'47	
evening set	2251 Nov 21 16:15	13° $\overline{\approx}$ '43'08		opposition	2257 Aug 10 17:16	18° $\overline{\approx}$ '16'31	-1°-3'-7
conjunction	2251 Dec 08 09:11	15° $\overline{\approx}$ '40'45	1°27'25	min. Earth dist.	2257 Aug 10 21:21	18° $\overline{\approx}$ '15'46	8.92507 AU
minimum elong	2251 Dec 08 09:13	15° $\overline{\approx}$ '40'45	1°27'26		2257 Oct 13 10:49	15° $\overline{\approx}$ '00	
max. Earth dist.	2251 Dec 08 06:39	15° $\overline{\approx}$ '40'00	11.02026 AU	direct	2257 Oct 19 11:01	14° $\overline{\approx}$ '58'11	
morning rise	2251 Dec 24 23:46	17° $\overline{\approx}$ '37'45			2257 Oct 25 10:47	15° $\overline{\approx}$ '00	
retrograde	2252 Apr 02 21:03	24° $\overline{\approx}$ '36'15		evening set	2258 Jan 27 08:25	22° $\overline{\approx}$ '02'55	
opposition	2252 Jun 11 20:46	21° $\overline{\approx}$ '18'51	1°33'52	conjunction	2258 Feb 13 01:11	24° $\overline{\approx}$ '02'19	-1°-3'-52



minimum elong	2258 Feb 13 01:09	24° <del>30</del> 02'18	1°03'52	minimum elong	2264 Apr 29 10:53	9° <del>30</del> 32'13	2°10'25
max. Earth dist.	2258 Feb 12 19:32	24° <del>30</del> 00'37	10.88589 AU	max. Earth dist.	2264 Apr 29 10:21	9° <del>30</del> 32'03	10.24436 AU
morning rise	2258 Mar 01 20:41	26° <del>30</del> 02'33		morning rise	2264 May 17 01:49	11° <del>30</del> 46'27	
	2258 Apr 07 16:22	0° <del>30</del>			2264 Jun 13 05:32	15° <del>30</del>	
retrograde	2258 Jun 13 10:06	3° <del>30</del> 22'57		retrograde	2264 Sep 01 00:11	19° <del>30</del> 57'50	
opposition	2258 Aug 23 04:55	0° <del>30</del> 01'28	-1°-33'-2	opposition	2264 Nov 08 14:05	16° <del>30</del> 28'46	-2°-36'-11
min. Earth dist.	2258 Aug 23 09:26	0° <del>30</del> 00'37	8.84265 AU	min. Earth dist.	2264 Nov 08 13:52	16° <del>30</del> 28'48	8.19901 AU
	2258 Aug 23 12:45	30° <del>30</del>			2264 Nov 27 12:09	15° <del>30</del>	
direct	2258 Oct 31 10:58	26° <del>30</del> 42'44		direct	2265 Jan 14 06:25	13° <del>30</del> 03'48	
	2259 Jan 03 15:42	0° <del>30</del>			2265 Mar 01 18:15	15° <del>30</del>	
evening set	2259 Feb 08 06:05	3° <del>30</del> 51'48		evening set	2265 Apr 26 03:42	20° <del>30</del> 57'33	
conjunction	2259 Feb 25 00:17	5° <del>30</del> 52'42	-1°-26'-51	conjunction	2265 May 13 18:57	23° <del>30</del> 13'00	-1°-59'-7
minimum elong	2259 Feb 25 00:15	5° <del>30</del> 52'41	1°26'52	minimum elong	2265 May 13 19:00	23° <del>30</del> 13'01	1°59'08
max. Earth dist.	2259 Feb 24 19:05	5° <del>30</del> 51'08	10.79511 AU	max. Earth dist.	2265 May 13 20:39	23° <del>30</del> 13'33	10.15560 AU
morning rise	2259 Mar 13 21:48	7° <del>30</del> 54'37		morning rise	2265 May 31 14:11	25° <del>30</del> 29'46	
retrograde	2259 Jun 26 06:09	15° <del>30</del> 23'19			2265 Jul 09 11:56	0° <del>30</del>	
opposition	2259 Sep 04 20:59	12° <del>30</del> 00'29	-1°-59'-34	retrograde	2265 Sep 15 10:37	3° <del>30</del> 46'05	
min. Earth dist.	2259 Sep 05 01:01	11° <del>30</del> 59'43	8.74472 AU	opposition	2265 Nov 22 13:09	0° <del>30</del> 16'23	-2°-17'-53
direct	2259 Nov 12 16:31	8° <del>30</del> 41'08		min. Earth dist.	2265 Nov 22 11:14	0° <del>30</del> 16'46	8.11959 AU
evening set	2260 Feb 20 10:59	15° <del>30</del> 55'55			2265 Nov 25 21:29	30° <del>30</del>	
				direct	2266 Jan 28 01:57	26° <del>30</del> 50'11	
conjunction	2260 Mar 08 07:13	17° <del>30</del> 58'41	-1°-46'-28		2266 Mar 29 08:24	0° <del>30</del>	
minimum elong	2260 Mar 08 07:10	17° <del>30</del> 58'41	1°46'29	evening set	2266 May 10 15:29	4° <del>30</del> 50'57	
max. Earth dist.	2260 Mar 08 02:58	17° <del>30</del> 57'24	10.69055 AU				
morning rise	2260 Mar 25 07:08	20° <del>30</del> 02'39		conjunction	2266 May 28 11:30	7° <del>30</del> 08'47	-1°-40'-46
retrograde	2260 Jul 08 10:53	27° <del>30</del> 40'24		minimum elong	2266 May 28 11:33	7° <del>30</del> 08'48	1°40'47
opposition	2260 Sep 16 17:59	24° <del>30</del> 16'09	-2°-21'-23	max. Earth dist.	2266 May 28 14:56	7° <del>30</del> 09'54	10.08707 AU
min. Earth dist.	2260 Sep 16 21:00	24° <del>30</del> 15'34	8.63538 AU	morning rise	2266 Jun 15 10:41	9° <del>30</del> 27'41	
direct	2260 Nov 24 00:38	20° <del>30</del> 56'00		retrograde	2266 Sep 29 23:42	17° <del>30</del> 46'34	
evening set	2261 Mar 04 00:14	28° <del>30</del> 17'40		opposition	2266 Dec 06 15:15	14° <del>30</del> 16'36	-1°-51'-8
	2261 Mar 17 21:54	0° <del>30</del>		min. Earth dist.	2266 Dec 06 12:04	14° <del>30</del> 17'15	8.06251 AU
conjunction	2261 Mar 20 22:59	0° <del>30</del> 22'36	-2°-1'-35	direct	2267 Feb 11 02:38	10° <del>30</del> 49'14	
minimum elong	2261 Mar 20 22:58	0° <del>30</del> 22'36	2°01'37	evening set	2267 May 25 10:19	18° <del>30</del> 55'46	
max. Earth dist.	2261 Mar 20 19:16	0° <del>30</del> 21'27	10.57721 AU				
morning rise	2261 Apr 07 01:54	2° <del>30</del> 28'54		conjunction	2267 Jun 12 10:26	21° <del>30</del> 15'27	-1°-16'-13
retrograde	2261 Jul 21 22:24	10° <del>30</del> 16'00		minimum elong	2267 Jun 12 10:29	21° <del>30</del> 15'28	1°16'14
opposition	2261 Sep 29 20:44	6° <del>30</del> 50'21	-2°-37'-5	max. Earth dist.	2267 Jun 12 14:58	21° <del>30</del> 16'56	10.04289 AU
min. Earth dist.	2261 Sep 29 22:54	6° <del>30</del> 49'56	8.52011 AU	morning rise	2267 Jun 30 12:46	23° <del>30</del> 35'52	
direct	2261 Dec 06 14:56	3° <del>30</del> 29'10			2267 Aug 28 21:54	0° <del>30</del>	
evening set	2262 Mar 16 22:31	10° <del>30</del> 58'33		retrograde	2267 Oct 14 14:07	1° <del>30</del> 54'46	
					2267 Nov 30 21:17	30° <del>30</del>	
conjunction	2262 Apr 03 00:24	13° <del>30</del> 05'56	-2°-11'-11	opposition	2267 Dec 20 19:12	28° <del>30</del> 24'56	-1°-17'-22
minimum elong	2262 Apr 03 00:23	13° <del>30</del> 05'56	2°11'13	min. Earth dist.	2267 Dec 20 15:19	28° <del>30</del> 25'45	8.03125 AU
max. Earth dist.	2262 Apr 02 21:07	13° <del>30</del> 04'55	10.46102 AU	direct	2268 Feb 25 07:43	24° <del>30</del> 25'34	
morning rise	2262 Apr 20 06:55	15° <del>30</del> 14'47			2268 May 13 17:35	0° <del>30</del>	
retrograde	2262 Aug 04 16:37	23° <del>30</del> 11'02		evening set	2268 Jun 08 10:06	3° <del>30</del> 07'15	
opposition	2262 Oct 13 05:17	19° <del>30</del> 44'03	-2°-45'-26				
min. Earth dist.	2262 Oct 13 06:55	19° <del>30</del> 43'43	8.40494 AU	conjunction	2268 Jun 26 13:05	5° <del>30</del> 28'02	0°-46'-54
direct	2262 Dec 19 12:57	16° <del>30</del> 21'40		minimum elong	2268 Jun 26 13:07	5° <del>30</del> 28'03	0°46'55
evening set	2263 Mar 30 06:36	23° <del>30</del> 59'15		max. Earth dist.	2268 Jun 26 18:11	5° <del>30</del> 29'41	10.02573 AU
				morning rise	2268 Jul 14 17:11	7° <del>30</del> 49'09	
conjunction	2263 Apr 16 12:24	26° <del>30</del> 09'18	-2°-14'-20	retrograde	2268 Oct 28 02:27	16° <del>30</del> 05'35	
minimum elong	2263 Apr 16 12:24	26° <del>30</del> 09'18	2°14'22	opposition	2269 Jan 02 23:28	12° <del>30</del> 36'16	0°-38'-44
max. Earth dist.	2263 Apr 16 10:09	26° <del>30</del> 08'35	10.34806 AU	min. Earth dist.	2269 Jan 02 19:24	12° <del>30</del> 37'06	8.02785 AU
morning rise	2263 May 03 23:01	28° <del>30</del> 20'51		direct	2269 Mar 10 17:36	9° <del>30</del> 07'08	
	2263 May 17 14:05	0° <del>30</del>		evening set	2269 Jun 23 12:09	17° <del>30</del> 02'05	
retrograde	2263 Aug 18 17:52	6° <del>30</del> 25'22					
opposition	2263 Oct 26 19:10	2° <del>30</del> 57'13	-2°-45'-20	conjunction	2269 Jul 11 16:30	19° <del>30</del> 41'02	0°-14'-44
min. Earth dist.	2263 Oct 26 20:08	2° <del>30</del> 57'01	8.29597 AU	minimum elong	2269 Jul 11 16:31	19° <del>30</del> 41'03	0°14'45
	2263 Dec 10 17:07	30° <del>30</del>		behind sun begin	2269 Jul 11 13:51	19° <del>30</del> 40'11	
direct	2264 Jan 01 17:41	29° <del>30</del> 33'33		behind sun end	2269 Jul 11 19:11	19° <del>30</del> 41'54	
	2264 Jan 23 14:34	0° <del>30</del>		max. Earth dist.	2269 Jul 11 21:42	19° <del>30</del> 42'43	10.03675 AU
evening set	2264 Apr 12 00:28	7° <del>30</del> 19'25		morning rise	2269 Jul 29 20:47	22° <del>30</del> 01'57	
					2269 Oct 26 17:53	0° <del>30</del>	
conjunction	2264 Apr 29 10:51	9° <del>30</del> 32'12	-2°-10'-24	retrograde	2269 Nov 11 10:16	0° <del>30</del> 13'44	
					2269 Nov 27 01:48	30° <del>30</del>	



asc. node	2269 Dec 28 06:25	28° $\overline{5}$ 19'56		direct	2276 Jun 15 12:45	13° $\overline{5}$ 39'59	
opposition	2270 Jan 17 02:36	26° $\overline{5}$ 45'15	0°02'09	evening set	2276 Sep 29 03:36	21° $\overline{5}$ 20'20	
min. Earth dist.	2270 Jan 16 22:29	26° $\overline{5}$ 46'06	8.05266 AU				
direct	2270 Mar 25 05:31	23° $\overline{5}$ 15'40		conjunction	2276 Oct 16 07:59	23° $\overline{5}$ 25'29	2°14'39
	2270 Jun 26 16:06	0° $\overline{0}$		minimum elong	2276 Oct 16 07:58	23° $\overline{5}$ 25'29	2°14'38
evening set	2270 Jul 08 13:44	1° $\overline{0}$ 28'51		max. Earth dist.	2276 Oct 16 09:22	23° $\overline{5}$ 25'54	10.66345 AU
				morning rise	2276 Nov 02 08:01	25° $\overline{5}$ 29'17	
conjunction	2270 Jul 26 17:45	3° $\overline{0}$ 49'04	0°18'12		2276 Dec 14 09:24	0° $\overline{0}$	
minimum elong	2270 Jul 26 17:45	3° $\overline{0}$ 49'04	0°18'13	retrograde	2277 Feb 10 02:31	2° $\overline{0}$ 45'54	
max. Earth dist.	2270 Jul 26 23:00	3° $\overline{0}$ 50'45	10.07525 AU		2277 Apr 11 23:06	30° $\overline{0}$	
morning rise	2270 Aug 13 20:30	6° $\overline{0}$ 08'50		opposition	2277 Apr 19 06:15	29° $\overline{0}$ 26'33	2°45'30
retrograde	2270 Nov 25 12:17	14° $\overline{0}$ 14'14		min. Earth dist.	2277 Apr 19 04:56	29° $\overline{0}$ 26'48	8.71941 AU
opposition	2271 Jan 31 03:16	10° $\overline{0}$ 46'50	0°42'32	direct	2277 Jun 28 18:29	26° $\overline{0}$ 02'00	
min. Earth dist.	2271 Jan 30 22:49	10° $\overline{0}$ 47'45	8.10402 AU		2277 Sep 09 10:11	0° $\overline{0}$	
direct	2271 Apr 08 17:29	7° $\overline{0}$ 17'10		evening set	2277 Oct 11 19:59	3° $\overline{0}$ 34'19	
	2271 Jul 19 16:54	15° $\overline{0}$					
evening set	2271 Jul 23 12:09	15° $\overline{0}$ 28'34		conjunction	2277 Oct 28 20:41	5° $\overline{0}$ 37'04	2°13'05
				minimum elong	2277 Oct 28 20:42	5° $\overline{0}$ 37'04	2°13'05
conjunction	2271 Aug 10 14:11	17° $\overline{0}$ 47'12	0°49'42	max. Earth dist.	2277 Oct 28 21:07	5° $\overline{0}$ 37'12	10.77028 AU
minimum elong	2271 Aug 10 14:09	17° $\overline{0}$ 47'11	0°49'42	morning rise	2277 Nov 14 17:13	7° $\overline{0}$ 38'36	
max. Earth dist.	2271 Aug 10 19:33	17° $\overline{0}$ 48'55	10.13868 AU	retrograde	2278 Feb 22 06:39	14° $\overline{0}$ 48'51	
morning rise	2271 Aug 28 13:43	20° $\overline{0}$ 05'00		opposition	2278 May 01 20:32	11° $\overline{0}$ 30'24	2°39'41
retrograde	2271 Dec 09 08:10	28° $\overline{0}$ 02'45		min. Earth dist.	2278 May 01 19:55	11° $\overline{0}$ 30'31	8.82070 AU
opposition	2272 Feb 14 00:12	24° $\overline{0}$ 36'40	1°19'48	direct	2278 Jul 11 17:04	8° $\overline{0}$ 07'05	
min. Earth dist.	2272 Feb 13 19:23	24° $\overline{0}$ 37'38	8.17867 AU		2278 Oct 19 14:26	15° $\overline{0}$	
direct	2272 Apr 22 02:04	21° $\overline{0}$ 07'15		evening set	2278 Oct 24 03:20	15° $\overline{0}$ 31'44	
evening set	2272 Aug 06 04:40	29° $\overline{0}$ 14'58					
	2272 Aug 12 04:04	0° $\overline{0}$		conjunction	2278 Nov 10 01:02	17° $\overline{0}$ 32'30	2°05'45
				minimum elong	2278 Nov 10 01:04	17° $\overline{0}$ 32'31	2°05'45
conjunction	2272 Aug 24 03:22	1° $\overline{0}$ 31'21	1°17'52	max. Earth dist.	2278 Nov 10 00:43	17° $\overline{0}$ 32'24	10.86483 AU
minimum elong	2272 Aug 24 03:19	1° $\overline{0}$ 31'20	1°17'53	morning rise	2278 Nov 26 18:49	19° $\overline{0}$ 32'10	
max. Earth dist.	2272 Aug 24 08:53	1° $\overline{0}$ 33'06	10.22317 AU	retrograde	2279 Mar 06 07:26	26° $\overline{0}$ 37'18	
morning rise	2272 Sep 10 22:30	3° $\overline{0}$ 46'35		opposition	2279 May 14 06:54	23° $\overline{0}$ 19'34	2°27'11
retrograde	2272 Dec 21 22:27	11° $\overline{0}$ 35'57		min. Earth dist.	2279 May 14 07:51	23° $\overline{0}$ 19'23	8.90723 AU
opposition	2273 Feb 26 16:46	8° $\overline{0}$ 11'17	1°51'48	direct	2279 Jul 24 07:09	19° $\overline{0}$ 57'26	
min. Earth dist.	2273 Feb 26 11:48	8° $\overline{0}$ 12'17	8.27210 AU	evening set	2279 Nov 05 02:51	27° $\overline{0}$ 15'09	
direct	2273 May 06 06:44	4° $\overline{0}$ 42'27					
evening set	2273 Aug 20 13:06	12° $\overline{0}$ 44'51		conjunction	2279 Nov 21 22:05	29° $\overline{0}$ 14'21	1°53'14
				minimum elong	2279 Nov 21 22:08	29° $\overline{0}$ 14'22	1°53'14
conjunction	2273 Sep 07 07:32	14° $\overline{0}$ 58'32	1°41'14	max. Earth dist.	2279 Nov 21 20:00	29° $\overline{0}$ 13'44	10.94261 AU
minimum elong	2273 Sep 07 07:29	14° $\overline{0}$ 58'31	1°41'15		2279 Nov 28 07:30	0° $\overline{0}$	
max. Earth dist.	2273 Sep 07 13:04	15° $\overline{0}$ 00'16	10.32369 AU	morning rise	2279 Dec 08 14:04	1° $\overline{0}$ 12'39	
morning rise	2273 Sep 24 21:39	17° $\overline{0}$ 10'52		retrograde	2280 Mar 17 03:12	8° $\overline{0}$ 14'09	
retrograde	2274 Jan 04 04:42	24° $\overline{0}$ 51'33		opposition	2280 May 25 14:00	4° $\overline{0}$ 56'52	2°08'51
opposition	2274 Mar 12 04:14	21° $\overline{0}$ 28'20	2°17'00	min. Earth dist.	2280 May 25 16:49	4° $\overline{0}$ 56'21	8.97527 AU
min. Earth dist.	2274 Mar 12 00:01	21° $\overline{0}$ 29'11	8.37879 AU	direct	2280 Aug 04 17:17	1° $\overline{0}$ 35'47	
direct	2274 May 20 06:43	18° $\overline{0}$ 00'21		evening set	2280 Nov 15 20:16	8° $\overline{0}$ 14'41	
evening set	2274 Sep 03 12:20	25° $\overline{0}$ 56'11					
				conjunction	2280 Dec 02 13:41	10° $\overline{0}$ 14'45	1°36'16
conjunction	2274 Sep 21 01:58	28° $\overline{0}$ 06'56	1°58'46	minimum elong	2280 Dec 02 13:44	10° $\overline{0}$ 14'45	1°36'16
minimum elong	2274 Sep 21 01:55	28° $\overline{0}$ 06'55	1°58'46	max. Earth dist.	2280 Dec 02 09:27	10° $\overline{0}$ 14'42	11.00078 AU
max. Earth dist.	2274 Sep 21 06:35	28° $\overline{0}$ 08'22	10.43446 AU	morning rise	2280 Dec 19 04:45	12° $\overline{0}$ 14'37	
	2274 Oct 06 05:49	0° $\overline{0}$		retrograde	2281 Mar 28 22:29	19° $\overline{0}$ 14'29	
morning rise	2274 Oct 08 10:55	0° $\overline{0}$ 16'16		opposition	2281 Jun 06 18:29	16° $\overline{0}$ 12'53	1°45'37
retrograde	2275 Jan 17 02:56	7° $\overline{0}$ 48'21		min. Earth dist.	2281 Jun 06 22:20	16° $\overline{0}$ 12'40	9.02277 AU
opposition	2275 Mar 25 10:15	4° $\overline{0}$ 26'35	2°34'29	direct	2281 Aug 16 23:10	13° $\overline{0}$ 12'51	
min. Earth dist.	2275 Mar 25 07:21	4° $\overline{0}$ 27'09	8.49282 AU	evening set	2281 Nov 27 09:04	20° $\overline{0}$ 12'25	
direct	2275 Jun 03 01:06	0° $\overline{0}$ 59'38					
evening set	2275 Sep 17 01:18	8° $\overline{0}$ 47'59		conjunction	2281 Dec 14 01:23	22° $\overline{0}$ 09'46	1°15'36
				minimum elong	2281 Dec 14 01:25	22° $\overline{0}$ 09'46	1°15'37
conjunction	2275 Oct 04 10:05	10° $\overline{0}$ 55'50	2°09'57	max. Earth dist.	2281 Dec 13 20:27	22° $\overline{0}$ 08'18	11.03785 AU
minimum elong	2275 Oct 04 10:03	10° $\overline{0}$ 55'49	2°09'56	morning rise	2281 Dec 30 16:00	24° $\overline{0}$ 06'38	
max. Earth dist.	2275 Oct 04 13:02	10° $\overline{0}$ 56'44	10.54964 AU		2282 Mar 04 03:31	0° $\overline{0}$	
morning rise	2275 Oct 21 14:16	13° $\overline{0}$ 02'16		retrograde	2282 Apr 09 17:06	1° $\overline{0}$ 05'21	
retrograde	2276 Jan 29 18:27	20° $\overline{0}$ 26'14			2282 May 17 05:34	30° $\overline{0}$	
opposition	2276 Apr 06 10:57	17° $\overline{0}$ 05'46	2°43'56	opposition	2282 Jun 18 21:38	27° $\overline{0}$ 14'08	1°18'26
min. Earth dist.	2276 Apr 06 09:06	17° $\overline{0}$ 06'08	8.60829 AU	min. Earth dist.	2282 Jun 19 01:34	27° $\overline{0}$ 14'24	9.04858 AU



direct	2282 Aug 29 00:18	24° <del>2</del> 28'40		morning rise	2288 Mar 07 22:36	2° <del>1</del> 53'49	
	2282 Nov 25 02:23	0° <del>3</del>		retrograde	2288 Jun 19 23:06	10° <del>1</del> 19'34	
evening set	2282 Dec 08 18:48	1° <del>3</del> 32'24		opposition	2288 Aug 29 15:14	6° <del>1</del> 56'40	-1°-48'-26
				min. Earth dist.	2288 Aug 29 18:52	6° <del>1</del> 55'59	8.76650 AU
conjunction	2282 Dec 25 10:31	3° <del>3</del> 29'24	0°52'06	direct	2288 Nov 06 15:32	3° <del>1</del> 36'59	
minimum elong	2282 Dec 25 10:33	3° <del>3</del> 29'25	0°52'06	evening set	2289 Feb 14 10:15	10° <del>1</del> 49'54	
max. Earth dist.	2282 Dec 25 05:41	3° <del>3</del> 27'59	11.05290 AU				
morning rise	2283 Jan 11 01:05	5° <del>3</del> 26'09		conjunction	2289 Mar 03 05:28	12° <del>1</del> 52'03	-1°-38'-20
retrograde	2283 Apr 21 14:06	12° <del>3</del> 25'46		minimum elong	2289 Mar 03 05:26	12° <del>1</del> 52'02	1°38'21
opposition	2283 Jul 01 00:22	9° <del>3</del> 08'08	0°48'19	max. Earth dist.	2289 Mar 03 00:23	12° <del>1</del> 50'30	10.71559 AU
min. Earth dist.	2283 Jul 01 04:32	9° <del>3</del> 07'22	9.05225 AU	morning rise	2289 Mar 20 04:24	14° <del>1</del> 55'20	
direct	2283 Sep 09 23:35	5° <del>3</del> 49'10		retrograde	2289 Jul 02 23:56	22° <del>1</del> 29'44	
evening set	2283 Dec 20 03:20	12° <del>3</del> 50'46		opposition	2289 Sep 11 10:19	19° <del>1</del> 05'31	-2°-12'-32
				min. Earth dist.	2289 Sep 11 13:48	19° <del>1</del> 04'51	8.66335 AU
conjunction	2284 Jan 05 18:42	14° <del>3</del> 47'47	0°26'35	direct	2289 Nov 18 21:51	15° <del>1</del> 45'06	
minimum elong	2284 Jan 05 18:43	14° <del>3</del> 47'48	0°26'35	evening set	2290 Feb 26 19:50	23° <del>1</del> 04'23	
max. Earth dist.	2284 Jan 05 13:12	14° <del>3</del> 46'10	11.04577 AU				
morning rise	2284 Jan 22 09:49	16° <del>3</del> 44'48		conjunction	2290 Mar 15 17:19	25° <del>1</del> 08'31	-1°-55'-35
retrograde	2284 May 02 12:01	23° <del>3</del> 46'46		minimum elong	2290 Mar 15 17:16	25° <del>1</del> 08'31	1°55'36
opposition	2284 Jul 12 03:30	20° <del>3</del> 28'27	0°16'17	max. Earth dist.	2290 Mar 15 13:10	25° <del>1</del> 07'15	10.60814 AU
min. Earth dist.	2284 Jul 12 08:37	20° <del>3</del> 27'31	9.03400 AU	morning rise	2290 Apr 01 19:00	27° <del>1</del> 13'58	
direct	2284 Sep 20 19:25	17° <del>3</del> 09'45			2290 Apr 25 19:19	0° <del>1</del>	
evening set	2284 Dec 30 12:07	24° <del>3</del> 10'40		retrograde	2290 Jul 16 06:57	4° <del>1</del> 57'37	
desc. node	2285 Jan 15 09:53	26° <del>3</del> 02'51		opposition	2290 Sep 24 10:56	1° <del>1</del> 32'01	-2°-31'-7
				min. Earth dist.	2290 Sep 24 13:36	1° <del>1</del> 31'30	8.55334 AU
conjunction	2285 Jan 16 03:28	26° <del>3</del> 08'02	0°00'-2		2290 Oct 14 23:30	30° <del>1</del> 08'31	
minimum elong	2285 Jan 16 03:27	26° <del>3</del> 08'02	0°00'04	direct	2290 Dec 01 11:02	28° <del>1</del> 10'46	
behind sun begin	2285 Jan 15 21:00	26° <del>3</del> 06'09			2291 Jan 16 08:30	0° <del>1</del>	
behind sun end	2285 Jan 16 09:55	26° <del>3</del> 09'55		evening set	2291 Mar 11 14:06	5° <del>1</del> 37'19	
max. Earth dist.	2285 Jan 15 20:56	26° <del>3</del> 06'08	11.01693 AU				
morning rise	2285 Feb 01 19:35	28° <del>3</del> 05'40		conjunction	2291 Mar 28 14:37	7° <del>1</del> 43'47	-2°-7'-44
	2285 Feb 18 19:09	0° <del>1</del>		minimum elong	2291 Mar 28 14:36	7° <del>1</del> 43'46	2°07'46
retrograde	2285 May 14 11:34	5° <del>1</del> 11'31		max. Earth dist.	2291 Mar 28 12:29	7° <del>1</del> 43'07	10.49623 AU
opposition	2285 Jul 24 08:00	1° <del>1</del> 52'18	0°-16'-34	morning rise	2291 Apr 14 19:31	9° <del>1</del> 51'39	
min. Earth dist.	2285 Jul 24 13:29	1° <del>1</del> 51'17	8.99455 AU	retrograde	2291 Jul 29 22:27	17° <del>1</del> 44'33	
	2285 Aug 20 04:50	30° <del>1</del> 08'31		opposition	2291 Oct 07 17:09	14° <del>1</del> 17'41	-2°-42'-50
direct	2285 Oct 02 16:10	28° <del>3</del> 33'37		min. Earth dist.	2291 Oct 07 18:12	14° <del>1</del> 17'28	8.44146 AU
	2285 Nov 13 21:05	0° <del>1</del>		direct	2291 Dec 14 06:33	10° <del>1</del> 55'29	
evening set	2286 Jan 10 22:47	5° <del>1</del> 35'22		evening set	2292 Mar 23 18:09	18° <del>1</del> 29'58	
conjunction	2286 Jan 27 14:32	7° <del>1</del> 33'26	0°-26'-52	conjunction	2292 Apr 09 22:19	20° <del>1</del> 38'59	-2°-13'-48
minimum elong	2286 Jan 27 14:31	7° <del>1</del> 33'26	0°26'53	minimum elong	2292 Apr 09 22:18	20° <del>1</del> 38'58	2°13'49
max. Earth dist.	2286 Jan 27 08:25	7° <del>1</del> 31'38	10.96736 AU	max. Earth dist.	2292 Apr 09 21:43	20° <del>1</del> 38'47	10.38525 AU
morning rise	2286 Feb 13 07:48	9° <del>1</del> 31'59		morning rise	2292 Apr 27 06:57	22° <del>1</del> 49'27	
	2286 Apr 10 01:27	15° <del>1</del>			2292 Jul 11 07:13	0° <del>1</del>	
retrograde	2286 May 26 17:58	16° <del>1</del> 43'12		retrograde	2292 Aug 11 22:29	0° <del>1</del> 51'00	
	2286 Jul 13 21:37	15° <del>1</del> 08'31			2292 Sep 12 18:07	30° <del>1</del> 08'31	
opposition	2286 Aug 05 14:48	13° <del>1</del> 22'53	0°-49'-8	opposition	2292 Oct 20 04:55	27° <del>1</del> 23'03	-2°-46'-30
min. Earth dist.	2286 Aug 05 19:38	13° <del>1</del> 21'59	8.93528 AU	min. Earth dist.	2292 Oct 20 04:31	27° <del>1</del> 23'08	8.33329 AU
direct	2286 Oct 14 14:46	10° <del>1</del> 04'03		direct	2292 Dec 26 07:07	23° <del>1</del> 59'49	
	2287 Jan 03 15:11	15° <del>1</del>			2293 Mar 23 07:21	0° <del>1</del>	
evening set	2287 Jan 22 13:00	17° <del>1</del> 08'05		evening set	2293 Apr 06 08:07	1° <del>1</del> 42'31	
conjunction	2287 Feb 08 05:35	19° <del>1</del> 07'12	0°-52'-52	conjunction	2293 Apr 23 16:28	3° <del>1</del> 54'13	-2°-13'00
minimum elong	2287 Feb 08 05:33	19° <del>1</del> 07'11	0°52'53	minimum elong	2293 Apr 23 16:29	3° <del>1</del> 54'13	2°13'01
max. Earth dist.	2287 Feb 08 00:32	19° <del>1</del> 05'41	10.89883 AU	max. Earth dist.	2293 Apr 23 17:04	3° <del>1</del> 54'24	10.28109 AU
morning rise	2287 Feb 25 00:14	21° <del>1</del> 07'00		morning rise	2293 May 11 05:20	6° <del>1</del> 07'23	
retrograde	2287 Jun 08 05:17	28° <del>1</del> 24'55		retrograde	2293 Aug 26 04:08	14° <del>1</del> 16'25	
opposition	2287 Aug 18 00:56	25° <del>1</del> 03'20	-1°-20'-11	opposition	2293 Nov 02 22:14	10° <del>1</del> 47'38	-2°-41'-17
min. Earth dist.	2287 Aug 18 04:46	25° <del>1</del> 02'37	8.85834 AU	min. Earth dist.	2293 Nov 02 20:45	10° <del>1</del> 47'57	8.23478 AU
direct	2287 Oct 26 13:09	21° <del>1</del> 44'11		direct	2294 Jan 08 15:53	7° <del>1</del> 23'19	
evening set	2288 Feb 03 08:20	28° <del>1</del> 51'58			2294 Apr 18 10:57	15° <del>1</del>	
	2288 Feb 12 20:12	0° <del>1</del>		evening set	2294 Apr 20 07:41	15° <del>1</del> 14'02	
conjunction	2288 Feb 20 02:02	0° <del>1</del> 52'26	-1°-17'-3	conjunction	2294 May 07 20:40	17° <del>1</del> 28'24	-2°-4'-52
minimum elong	2288 Feb 20 01:59	0° <del>1</del> 52'26	1°17'04	minimum elong	2294 May 07 20:42	17° <del>1</del> 28'25	2°04'53
max. Earth dist.	2288 Feb 19 21:02	0° <del>1</del> 50'56	10.81384 AU	max. Earth dist.	2294 May 07 22:17	17° <del>1</del> 28'55	10.18971 AU



morning rise	2294 May 25 14:03	19°♄44'10			2300 Aug 27 20:18	15°♄	
retrograde	2294 Sep 09 13:42	27°♄58'57		retrograde	2300 Dec 03 21:23	22°♄22'08	
opposition	2294 Nov 16 20:15	24°♄29'38	-2°-26'-51	opposition	2301 Feb 08 10:50	18°♄55'57	1°04'17
min. Earth dist.	2294 Nov 16 18:08	24°♄30'03	8.15169 AU	min. Earth dist.	2301 Feb 08 06:52	18°♄56'45	8.15135 AU
direct	2295 Jan 22 08:50	21°♄04'12		direct	2301 Apr 17 05:06	15°♄26'51	
evening set	2295 May 04 16:30	29°♄02'17		evening set	2301 Aug 01 07:08	23°♄36'26	
	2295 May 12 05:19	0°♄					
conjunction	2295 May 22 10:18	1°♄19'08	-1°-49'-29	conjunction	2301 Aug 19 07:21	25°♄53'51	1°06'17
minimum elong	2295 May 22 10:21	1°♄19'09	1°49'30	minimum elong	2301 Aug 19 07:18	25°♄53'50	1°06'17
max. Earth dist.	2295 May 22 13:09	1°♄20'03	10.11651 AU	max. Earth dist.	2301 Aug 19 12:00	25°♄55'20	10.18995 AU
morning rise	2295 Jun 09 07:57	3°♄37'11		morning rise	2301 Sep 06 04:27	28°♄10'15	
retrograde	2295 Sep 24 02:14	11°♄55'25		retrograde	2301 Sep 21 03:44	0°♄	
opposition	2295 Nov 30 21:41	8°♄25'53	-2°-3'-35	opposition	2301 Dec 17 14:43	6°♄03'30	
min. Earth dist.	2295 Nov 30 18:54	8°♄26'27	8.08905 AU	opposition	2302 Feb 22 05:41	2°♄38'36	1°38'49
direct	2296 Feb 05 08:14	4°♄59'24		min. Earth dist.	2302 Feb 22 02:21	2°♄39'16	8.23344 AU
evening set	2296 May 18 09:02	13°♄03'42		direct	2302 Mar 31 11:07	30°♄	
				evening set	2302 May 01 12:56	29°♄09'46	
conjunction	2296 Jun 05 07:17	15°♄22'36	-1°-27'-27		2302 Jun 01 13:20	0°♄	
minimum elong	2296 Jun 05 07:21	15°♄22'37	1°27'27		2302 Aug 15 19:51	7°♄14'54	
max. Earth dist.	2296 Jun 05 11:36	15°♄24'00	10.06589 AU	conjunction	2302 Sep 02 16:06	9°♄29'48	1°31'53
morning rise	2296 Jun 23 08:29	17°♄42'24		minimum elong	2302 Sep 02 16:02	9°♄29'47	1°31'54
retrograde	2296 Oct 07 16:07	26°♄01'34		max. Earth dist.	2302 Sep 02 19:44	9°♄30'58	10.28029 AU
opposition	2296 Dec 14 01:28	22°♄32'07	-1°-32'-35	morning rise	2302 Sep 20 08:34	11°♄43'29	
min. Earth dist.	2296 Dec 13 21:42	22°♄32'54	8.05057 AU	retrograde	2302 Dec 30 22:39	19°♄28'11	
direct	2297 Feb 18 12:53	19°♄04'41		opposition	2303 Mar 07 19:45	16°♄04'34	2°07'07
evening set	2297 Jun 02 07:06	27°♄13'36		min. Earth dist.	2303 Mar 07 16:43	16°♄05'10	8.33125 AU
				direct	2303 May 15 17:17	12°♄36'18	
conjunction	2297 Jun 20 08:55	29°♄33'53	0°-59'-58	evening set	2303 Aug 29 23:33	20°♄35'25	
minimum elong	2297 Jun 20 08:57	29°♄33'53	0°59'59				
max. Earth dist.	2297 Jun 20 14:30	29°♄35'42	10.04068 AU	conjunction	2303 Sep 16 15:11	22°♄47'29	1°52'02
	2297 Jun 23 17:06	0°♄		minimum elong	2303 Sep 16 15:08	22°♄47'28	1°52'03
morning rise	2297 Jul 08 12:26	1°♄54'42		max. Earth dist.	2303 Sep 16 18:07	22°♄48'25	10.38357 AU
retrograde	2297 Oct 22 05:14	10°♄12'16		morning rise	2303 Oct 04 02:32	24°♄58'12	
opposition	2297 Dec 28 06:00	6°♄43'13	0°-55'-45		2303 Nov 19 07:59	0°♄	
min. Earth dist.	2297 Dec 28 01:24	6°♄44'10	8.03815 AU	retrograde	2304 Jan 12 23:47	2°♄34'17	
direct	2298 Mar 04 21:57	3°♄14'58			2304 Mar 09 23:11	30°♄	
evening set	2298 Jun 17 08:39	11°♄26'46		opposition	2304 Mar 20 04:21	29°♄11'54	2°28'01
				min. Earth dist.	2304 Mar 20 01:16	29°♄12'31	8.43918 AU
conjunction	2298 Jul 05 12:39	13°♄47'36	0°-28'-47	direct	2304 May 28 15:13	25°♄44'26	
minimum elong	2298 Jul 05 12:40	13°♄47'37	0°28'48		2304 Aug 10 23:53	0°♄	
max. Earth dist.	2298 Jul 05 18:49	13°♄49'36	10.04158 AU	evening set	2304 Sep 11 17:04	3°♄36'23	
morning rise	2298 Jul 23 16:58	16°♄08'34					
retrograde	2298 Nov 05 15:12	24°♄22'19		conjunction	2304 Sep 29 04:01	5°♄45'33	2°05'59
opposition	2299 Jan 11 09:44	20°♄53'58	0°-15'-31	minimum elong	2304 Sep 29 03:59	5°♄45'32	2°06'00
min. Earth dist.	2299 Jan 11 04:52	20°♄54'58	8.05155 AU	max. Earth dist.	2304 Sep 29 06:51	5°♄46'26	10.49413 AU
direct	2299 Mar 19 08:40	17°♄25'09		morning rise	2304 Oct 16 10:19	7°♄53'19	
asc. node	2299 Jun 03 17:02	22°♄11'09		retrograde	2305 Jan 24 19:34	15°♄21'02	
evening set	2299 Jul 02 11:01	25°♄38'06		opposition	2305 Apr 02 07:22	11°♄59'49	2°40'57
				min. Earth dist.	2305 Apr 02 04:49	12°♄00'19	8.55144 AU
conjunction	2299 Jul 20 15:29	27°♄58'38	0°04'08	direct	2305 Jun 11 04:56	8°♄33'18	
minimum elong	2299 Jul 20 15:29	27°♄58'38	0°04'09	evening set	2305 Sep 24 23:57	16°♄17'23	
behind sun begin	2299 Jul 20 08:14	27°♄56'19					
behind sun end	2299 Jul 20 22:44	28°♄00'58		conjunction	2305 Oct 12 06:27	18°♄23'48	2°13'28
max. Earth dist.	2299 Jul 20 21:32	28°♄00'34	10.06764 AU	minimum elong	2305 Oct 12 06:26	18°♄23'47	2°13'28
	2299 Aug 05 07:36	0°♄		max. Earth dist.	2305 Oct 12 08:47	18°♄24'31	10.60620 AU
morning rise	2299 Aug 07 18:53	0°♄18'52		morning rise	2305 Oct 29 08:12	20°♄28'48	
retrograde	2299 Nov 19 21:05	8°♄27'04		retrograde	2306 Feb 06 06:51	27°♄48'44	
opposition	2300 Jan 25 11:46	4°♄59'43	0°25'23	opposition	2306 Apr 15 04:57	24°♄28'36	2°45'53
min. Earth dist.	2300 Jan 25 07:13	5°♄00'39	8.08972 AU	min. Earth dist.	2306 Apr 15 03:37	24°♄28'51	8.66234 AU
direct	2300 Apr 02 19:35	1°♄30'37		direct	2306 Jun 24 12:33	21°♄03'08	
evening set	2300 Jul 17 11:23	9°♄42'52		evening set	2306 Oct 07 20:38	28°♄39'10	
					2306 Oct 19 01:18	0°♄	
conjunction	2300 Aug 04 14:28	12°♄02'13	0°36'27				
minimum elong	2300 Aug 04 14:27	12°♄02'12	0°36'27	conjunction	2306 Oct 24 23:00	0°♄43'02	2°14'33
max. Earth dist.	2300 Aug 04 19:59	12°♄03'59	10.11777 AU	minimum elong	2306 Oct 24 23:00	0°♄43'02	2°14'32
morning rise	2300 Aug 22 15:22	14°♄20'52		max. Earth dist.	2306 Oct 25 00:00	0°♄43'20	10.71431 AU



morning rise	2306 Nov 10 20:56	2° $\mathbb{M}$ 45'36		opposition	2313 Jul 08 05:20	15° $\mathcal{Z}$ 46'36	0°30'27
retrograde	2307 Feb 18 11:57	9° $\mathbb{M}$ 58'41		min. Earth dist.	2313 Jul 08 08:44	15° $\mathcal{Z}$ 45'58	9.05971 AU
opposition	2307 Apr 27 21:25	6° $\mathbb{M}$ 39'28	2°43'09	direct	2313 Sep 17 01:50	12° $\mathcal{Z}$ 27'57	
min. Earth dist.	2307 Apr 27 21:30	6° $\mathbb{M}$ 39'27	8.76677 AU	evening set	2313 Dec 26 21:57	19° $\mathcal{Z}$ 28'07	
direct	2307 Jul 07 14:22	3° $\mathbb{M}$ 15'08					
evening set	2307 Oct 20 07:42	10° $\mathbb{M}$ 43'18		conjunction	2314 Jan 12 13:18	21° $\mathcal{Z}$ 25'03	0°11'45
				minimum elong	2314 Jan 12 13:18	21° $\mathcal{Z}$ 25'03	0°11'44
conjunction	2307 Nov 06 06:34	12° $\mathbb{M}$ 44'58	2°09'37	behind sun begin	2314 Jan 12 08:19	21° $\mathcal{Z}$ 23'36	
minimum elong	2307 Nov 06 06:35	12° $\mathbb{M}$ 44'58	2°09'37	behind sun end	2314 Jan 12 18:17	21° $\mathcal{Z}$ 26'30	
max. Earth dist.	2307 Nov 06 05:46	12° $\mathbb{M}$ 44'43	10.81382 AU	max. Earth dist.	2314 Jan 12 09:26	21° $\mathcal{Z}$ 23'55	11.05045 AU
morning rise	2307 Nov 23 01:37	14° $\mathbb{M}$ 45'30		morning rise	2314 Jan 29 04:45	23° $\mathcal{Z}$ 22'05	
	2307 Nov 25 02:58	15° $\mathbb{M}$			2314 Apr 17 21:38	0° $\approx$	
retrograde	2308 Mar 01 12:56	21° $\mathbb{M}$ 52'51		retrograde	2314 May 10 13:37	0° $\approx$ 25'00	
opposition	2308 May 09 09:18	18° $\mathbb{M}$ 34'22	2°33'24		2314 Jun 02 11:44	30° $\mathbb{R}$ $\mathcal{Z}$	
min. Earth dist.	2308 May 09 09:55	18° $\mathbb{M}$ 34'15	8.86034 AU	desc. node	2314 Jun 26 08:33	28° $\mathcal{Z}$ 47'35	
direct	2308 Jul 19 08:43	15° $\mathbb{M}$ 11'12		opposition	2314 Jul 20 08:20	27° $\mathcal{Z}$ 06'30	0°-2'-4
evening set	2308 Oct 31 10:05	22° $\mathbb{M}$ 31'58		min. Earth dist.	2314 Jul 20 11:33	27° $\mathcal{Z}$ 05'55	9.03575 AU
				direct	2314 Sep 28 21:24	23° $\mathcal{Z}$ 48'14	
conjunction	2308 Nov 17 06:20	24° $\mathbb{M}$ 31'52	1°59'15		2314 Dec 31 05:56	0° $\approx$	
minimum elong	2308 Nov 17 06:22	24° $\mathbb{M}$ 31'53	1°59'14	evening set	2315 Jan 07 06:54	0° $\approx$ 48'22	
max. Earth dist.	2308 Nov 17 04:53	24° $\mathbb{M}$ 31'26	10.90063 AU				
morning rise	2308 Dec 03 23:14	26° $\mathbb{M}$ 30'48		conjunction	2315 Jan 23 22:22	2° $\approx$ 45'48	0°-15'-5
	2309 Jan 05 02:40	0° $\mathcal{Z}$		minimum elong	2315 Jan 23 22:21	2° $\approx$ 45'48	0°15'05
retrograde	2309 Mar 13 09:43	3° $\mathcal{Z}$ 33'44		behind sun begin	2315 Jan 23 19:40	2° $\approx$ 45'01	
opposition	2309 May 21 17:15	0° $\mathcal{Z}$ 15'46	2°17'27	behind sun end	2315 Jan 24 01:03	2° $\approx$ 46'35	
min. Earth dist.	2309 May 21 18:03	0° $\mathcal{Z}$ 15'37	8.93921 AU	max. Earth dist.	2315 Jan 23 18:01	2° $\approx$ 44'31	11.01587 AU
	2309 May 25 05:35	30° $\mathbb{R}$ $\mathbb{M}$		morning rise	2315 Feb 09 14:50	4° $\approx$ 43'34	
direct	2309 Jul 31 21:16	26° $\mathbb{M}$ 53'46		retrograde	2315 May 22 17:28	11° $\approx$ 51'01	
	2309 Oct 03 22:57	0° $\mathcal{Z}$		opposition	2315 Aug 01 13:23	8° $\approx$ 31'44	0°-34'-47
evening set	2309 Nov 12 05:34	4° $\mathcal{Z}$ 08'01		min. Earth dist.	2315 Aug 01 17:08	8° $\approx$ 31'02	8.99074 AU
				direct	2315 Oct 10 16:47	5° $\approx$ 13'34	
conjunction	2309 Nov 28 23:55	6° $\mathcal{Z}$ 06'33	1°44'06	evening set	2316 Jan 18 18:47	12° $\approx$ 15'11	
minimum elong	2309 Nov 28 23:57	6° $\mathcal{Z}$ 06'34	1°44'06				
max. Earth dist.	2309 Nov 28 22:17	6° $\mathcal{Z}$ 06'04	10.97121 AU	conjunction	2316 Feb 04 10:41	14° $\approx$ 13'26	0°-41'-28
morning rise	2309 Dec 15 15:17	8° $\mathcal{Z}$ 04'17		minimum elong	2316 Feb 04 10:39	14° $\approx$ 13'25	0°41'28
retrograde	2310 Mar 25 06:11	15° $\mathcal{Z}$ 04'10		max. Earth dist.	2316 Feb 04 05:29	14° $\approx$ 11'53	10.96082 AU
opposition	2310 Jun 02 22:13	11° $\mathcal{Z}$ 46'35	1°56'13		2316 Feb 10 23:13	15° $\approx$	
min. Earth dist.	2310 Jun 02 23:41	11° $\mathcal{Z}$ 46'19	9.00035 AU	morning rise	2316 Feb 21 04:36	16° $\approx$ 12'16	
direct	2310 Aug 13 03:51	8° $\mathcal{Z}$ 25'39		retrograde	2316 Jun 02 23:40	23° $\approx$ 25'37	
evening set	2310 Nov 23 19:44	15° $\mathcal{Z}$ 34'26		opposition	2316 Aug 12 21:02	20° $\approx$ 05'19	-1°-6'-31
				min. Earth dist.	2316 Aug 13 01:22	20° $\approx$ 04'30	8.92616 AU
conjunction	2310 Dec 10 12:35	17° $\mathcal{Z}$ 32'00	1°24'57	direct	2316 Oct 21 14:00	16° $\approx$ 47'00	
minimum elong	2310 Dec 10 12:38	17° $\mathcal{Z}$ 32'01	1°24'57	evening set	2317 Jan 29 10:53	23° $\approx$ 51'36	
max. Earth dist.	2310 Dec 10 10:07	17° $\mathcal{Z}$ 31'16	11.02293 AU				
morning rise	2310 Dec 27 03:13	19° $\mathcal{Z}$ 28'59		conjunction	2317 Feb 15 03:46	25° $\approx$ 51'00	-1°-6'-29
retrograde	2311 Apr 06 00:09	26° $\mathcal{Z}$ 27'18		minimum elong	2317 Feb 15 03:44	25° $\approx$ 50'59	1°06'30
opposition	2311 Jun 15 01:25	23° $\mathcal{Z}$ 09'52	1°30'38	max. Earth dist.	2317 Feb 14 22:45	25° $\approx$ 49'29	10.88697 AU
min. Earth dist.	2311 Jun 15 04:13	23° $\mathcal{Z}$ 09'21	9.04167 AU	morning rise	2317 Mar 03 23:20	27° $\approx$ 51'12	
direct	2311 Aug 25 04:54	19° $\mathcal{Z}$ 49'53			2317 Mar 22 21:56	0° $\mathbb{H}$	
evening set	2311 Dec 05 05:58	26° $\mathcal{Z}$ 54'24		retrograde	2317 Jun 15 13:09	5° $\mathbb{H}$ 11'44	
				opposition	2317 Aug 25 08:24	1° $\mathbb{H}$ 50'12	-1°-36'-2
conjunction	2311 Dec 21 21:48	28° $\mathcal{Z}$ 51'23	1°02'36	min. Earth dist.	2317 Aug 25 12:23	1° $\mathbb{H}$ 49'27	8.84387 AU
minimum elong	2311 Dec 21 21:49	28° $\mathcal{Z}$ 51'24	1°02'36		2317 Sep 20 06:05	30° $\mathbb{R}$ $\approx$	
max. Earth dist.	2311 Dec 21 17:50	28° $\mathcal{Z}$ 50'13	11.05402 AU	direct	2317 Nov 02 15:25	28° $\approx$ 31'31	
	2311 Dec 31 15:09	0° $\mathcal{Z}$			2317 Dec 14 15:10	0° $\mathbb{H}$	
morning rise	2312 Jan 07 12:24	0° $\mathcal{Z}$ 48'02		evening set	2318 Feb 10 08:38	5° $\mathbb{H}$ 40'27	
retrograde	2312 Apr 16 18:00	7° $\mathcal{Z}$ 46'21					
opposition	2312 Jun 26 03:32	4° $\mathcal{Z}$ 28'48	1°01'42	conjunction	2318 Feb 27 02:57	7° $\mathbb{H}$ 41'22	-1°-29'-6
min. Earth dist.	2312 Jun 26 07:04	4° $\mathcal{Z}$ 28'09	9.06170 AU	minimum elong	2318 Feb 27 02:55	7° $\mathbb{H}$ 41'21	1°29'07
direct	2312 Sep 05 04:48	1° $\mathcal{Z}$ 09'34		max. Earth dist.	2318 Feb 26 22:46	7° $\mathbb{H}$ 40'05	10.79640 AU
evening set	2312 Dec 15 14:11	8° $\mathcal{Z}$ 11'12		morning rise	2318 Mar 16 00:26	9° $\mathbb{H}$ 43'16	
				retrograde	2318 Jun 28 10:48	17° $\mathbb{H}$ 12'02	
conjunction	2313 Jan 01 05:33	10° $\mathcal{Z}$ 08'00	0°37'54	opposition	2318 Sep 07 00:14	13° $\mathbb{H}$ 49'10	-2°-2'-3
minimum elong	2313 Jan 01 05:34	10° $\mathcal{Z}$ 08'00	0°37'54	min. Earth dist.	2318 Sep 07 03:28	13° $\mathbb{H}$ 48'34	8.74627 AU
max. Earth dist.	2313 Jan 01 01:11	10° $\mathcal{Z}$ 06'42	11.06333 AU	direct	2318 Nov 14 18:37	10° $\mathbb{H}$ 29'53	
morning rise	2313 Jan 17 20:28	12° $\mathcal{Z}$ 04'39		evening set	2319 Feb 22 13:36	17° $\mathbb{H}$ 44'33	
retrograde	2313 Apr 28 14:17	19° $\mathcal{Z}$ 04'30					



conjunction	2319 Mar 11 09:51	19° <del>✕</del> 47'17	-1°-48'-14	conjunction	2325 May 30 15:36	8° <del>II</del> 59'09	-1°-38'-40
minimum elong	2319 Mar 11 09:48	19° <del>✕</del> 47'17	1°48'15	minimum elong	2325 May 30 15:39	8° <del>II</del> 59'10	1°38'40
max. Earth dist.	2319 Mar 11 05:42	19° <del>✕</del> 46'02	10.69213 AU	max. Earth dist.	2325 May 30 18:16	9° <del>II</del> 00'00	10.08605 AU
morning rise	2319 Mar 28 09:49	21° <del>✕</del> 51'14		morning rise	2325 Jun 17 15:00	11° <del>II</del> 18'08	
retrograde	2319 Jul 11 14:10	29° <del>✕</del> 29'01		retrograde	2325 Oct 02 04:31	19° <del>II</del> 36'57	
opposition	2319 Sep 19 21:10	26° <del>✕</del> 04'47	-2°-23'-12	opposition	2325 Dec 08 18:15	16° <del>II</del> 07'03	-1°-48'-11
min. Earth dist.	2319 Sep 20 00:02	26° <del>✕</del> 04'14	8.63702 AU	min. Earth dist.	2325 Dec 08 15:35	16° <del>II</del> 07'36	8.06138 AU
direct	2319 Nov 27 02:52	22° <del>✕</del> 44'40		direct	2326 Feb 13 04:26	12° <del>II</del> 39'40	
	2320 Mar 05 06:09	0° <del>Y</del>		evening set	2326 May 27 14:26	20° <del>II</del> 46'27	
evening set	2320 Mar 06 02:56	0° <del>Y</del> 06'17					
conjunction	2320 Mar 23 01:41	2° <del>Y</del> 11'13	-2°-2'-47	conjunction	2326 Jun 14 14:40	23° <del>II</del> 06'12	-1°-13'-37
minimum elong	2320 Mar 23 01:39	2° <del>Y</del> 11'13	2°02'48	minimum elong	2326 Jun 14 14:43	23° <del>II</del> 06'13	1°13'38
max. Earth dist.	2320 Mar 22 21:10	2° <del>Y</del> 09'50	10.57873 AU	max. Earth dist.	2326 Jun 14 18:07	23° <del>II</del> 07'19	10.04184 AU
morning rise	2320 Apr 09 04:49	4° <del>Y</del> 17'31		morning rise	2326 Jul 02 17:14	25° <del>II</del> 26'42	
retrograde	2320 Jul 24 01:29	12° <del>Y</del> 04'39			2326 Aug 10 16:26	0° <del>☿</del>	
opposition	2320 Oct 01 23:48	8° <del>Y</del> 39'03	-2°-38'-9	retrograde	2326 Oct 16 18:39	3° <del>☿</del> 45'30	
min. Earth dist.	2320 Oct 02 02:37	8° <del>Y</del> 38'30	8.52143 AU	opposition	2326 Dec 22 22:20	0° <del>☿</del> 15'44	-1°-13'-54
direct	2320 Dec 08 17:50	5° <del>Y</del> 17'53		min. Earth dist.	2326 Dec 22 19:17	0° <del>☿</del> 16'22	8.03021 AU
evening set	2321 Mar 19 01:22	12° <del>Y</del> 47'18			2326 Dec 26 02:29	30° <del>R</del> <del>II</del>	
conjunction	2321 Apr 05 03:23	14° <del>Y</del> 54'42	-2°-11'-44	direct	2327 Feb 27 11:39	26° <del>II</del> 47'19	
minimum elong	2321 Apr 05 03:22	14° <del>Y</del> 54'42	2°11'45		2327 Apr 29 09:56	0° <del>☿</del>	
max. Earth dist.	2321 Apr 04 23:36	14° <del>Y</del> 53'31	10.46207 AU	evening set	2327 Jun 11 14:31	4° <del>☿</del> 58'16	
morning rise	2321 Apr 22 10:06	17° <del>Y</del> 03'35		conjunction	2327 Jun 29 17:36	7° <del>☿</del> 19'05	0°-43'-59
retrograde	2321 Aug 06 20:03	24° <del>Y</del> 59'51		minimum elong	2327 Jun 29 17:38	7° <del>☿</del> 19'05	0°43'59
opposition	2321 Oct 15 08:08	21° <del>Y</del> 32'56	-2°-45'-40	max. Earth dist.	2327 Jun 29 21:37	7° <del>☿</del> 20'23	10.02486 AU
min. Earth dist.	2321 Oct 15 10:25	21° <del>Y</del> 32'29	8.40569 AU	morning rise	2327 Jul 17 21:53	9° <del>☿</del> 40'15	
direct	2321 Dec 21 15:13	18° <del>Y</del> 10'35		retrograde	2327 Oct 31 05:17	17° <del>☿</del> 56'32	
evening set	2322 Apr 01 09:33	25° <del>Y</del> 48'16		opposition	2328 Jan 06 02:38	14° <del>☿</del> 27'17	0°-34'-57
conjunction	2322 Apr 18 15:38	27° <del>Y</del> 58'21	-2°-14'-11	min. Earth dist.	2328 Jan 05 23:13	14° <del>☿</del> 27'59	8.02709 AU
minimum elong	2322 Apr 18 15:38	27° <del>Y</del> 58'21	2°14'13	direct	2328 Mar 12 22:24	10° <del>☿</del> 58'06	
max. Earth dist.	2322 Apr 18 13:36	27° <del>Y</del> 57'43	10.34848 AU	evening set	2328 Jun 25 16:49	19° <del>☿</del> 11'17	
	2322 May 04 18:19	0° <del>♄</del>		conjunction	2328 Jul 13 21:12	21° <del>☿</del> 32'15	0°-11'-40
morning rise	2322 May 06 02:23	0° <del>♄</del> 09'57		minimum elong	2328 Jul 13 21:13	21° <del>☿</del> 32'15	0°11'40
retrograde	2322 Aug 20 20:35	8° <del>♄</del> 14'31		behind sun begin	2328 Jul 13 16:06	21° <del>☿</del> 30'37	
opposition	2322 Oct 28 22:01	4° <del>♄</del> 46'25	-2°-44'-43	behind sun end	2328 Jul 14 02:20	21° <del>☿</del> 33'54	
min. Earth dist.	2322 Oct 28 22:59	4° <del>♄</del> 46'13	8.29606 AU	max. Earth dist.	2328 Jul 14 01:48	21° <del>☿</del> 33'44	10.03617 AU
direct	2323 Jan 03 21:07	1° <del>♄</del> 22'48		morning rise	2328 Aug 01 01:30	23° <del>☿</del> 53'09	
evening set	2323 Apr 15 03:35	9° <del>♄</del> 08'47			2328 Sep 26 03:20	0° <del>♁</del>	
conjunction	2323 May 02 14:19	11° <del>♄</del> 21'40	-2°-9'-33	retrograde	2328 Nov 13 12:34	2° <del>♁</del> 04'47	
minimum elong	2323 May 02 14:21	11° <del>♄</del> 21'40	2°09'34	asc. node	2328 Nov 24 21:04	1° <del>♁</del> 57'35	
max. Earth dist.	2323 May 02 14:18	11° <del>♄</del> 21'39	10.24414 AU	opposition	2329 Jan 01 20:53	30° <del>R</del> <del>☿</del>	
morning rise	2323 May 20 05:24	13° <del>♄</del> 35'58		min. Earth dist.	2329 Jan 19 05:52	28° <del>☿</del> 36'20	0°06'00
	2323 May 31 14:41	15° <del>♄</del>		direct	2329 Jan 19 01:46	28° <del>☿</del> 37'11	8.05224 AU
retrograde	2323 Sep 04 02:57	21° <del>♄</del> 47'24			2329 Mar 27 10:03	25° <del>☿</del> 06'43	
opposition	2323 Nov 11 16:54	18° <del>♄</del> 18'22	-2°-34'-42	evening set	2329 Jun 13 00:20	0° <del>♁</del>	
min. Earth dist.	2323 Nov 11 16:17	18° <del>♄</del> 18'29	8.19851 AU		2329 Jul 10 18:22	3° <del>♁</del> 20'03	
	2324 Jan 06 12:57	15° <del>R</del> <del>♄</del>		conjunction	2329 Jul 28 22:23	5° <del>♁</del> 40'15	0°21'15
direct	2324 Jan 17 09:35	14° <del>♄</del> 53'27		minimum elong	2329 Jul 28 22:22	5° <del>♁</del> 40'15	0°21'16
	2324 Jan 28 04:01	15° <del>♄</del>		max. Earth dist.	2329 Jul 29 03:45	5° <del>♁</del> 41'59	10.07502 AU
evening set	2324 Apr 28 07:15	22° <del>♄</del> 47'22		morning rise	2329 Aug 16 00:55	7° <del>♁</del> 59'57	
conjunction	2324 May 15 22:48	25° <del>♄</del> 02'55	-1°-57'-36		2329 Oct 24 04:23	15° <del>♁</del>	
minimum elong	2324 May 15 22:51	25° <del>♄</del> 02'56	1°57'37	retrograde	2329 Nov 27 15:26	16° <del>♁</del> 05'13	
max. Earth dist.	2324 May 16 00:26	25° <del>♄</del> 03'27	10.15489 AU	opposition	2330 Jan 01 10:30	15° <del>R</del> <del>♁</del>	
morning rise	2324 Jun 02 18:13	27° <del>♄</del> 19'45		min. Earth dist.	2330 Feb 02 06:34	12° <del>♁</del> 37'49	0°46'13
	2324 Jun 24 18:17	0° <del>II</del>		direct	2330 Feb 02 01:42	12° <del>♁</del> 38'49	8.10399 AU
retrograde	2324 Sep 17 14:24	5° <del>II</del> 36'04			2330 Apr 10 20:52	9° <del>♁</del> 08'06	
opposition	2324 Nov 24 15:57	2° <del>II</del> 06'25	-2°-15'-37	evening set	2330 Jul 06 14:35	15° <del>♁</del>	
min. Earth dist.	2324 Nov 24 14:00	2° <del>II</del> 06'49	8.11865 AU		2330 Jul 25 16:46	17° <del>♁</del> 19'34	
	2324 Dec 22 11:07	30° <del>R</del> <del>♄</del>		conjunction	2330 Aug 12 18:44	19° <del>♁</del> 38'10	0°52'31
direct	2325 Jan 30 03:53	28° <del>♄</del> 40'13		minimum elong	2330 Aug 12 18:41	19° <del>♁</del> 38'09	0°52'31
	2325 Mar 09 07:31	0° <del>II</del>		max. Earth dist.	2330 Aug 13 00:39	19° <del>♁</del> 40'04	10.13884 AU
evening set	2325 May 12 19:24	6° <del>II</del> 41'13		morning rise	2330 Aug 30 17:57	21° <del>♁</del> 55'53	
				retrograde	2330 Dec 11 12:36	29° <del>♁</del> 53'28	



opposition	2331 Feb 16 03:31	26°♏27'21	1°23'06	opposition	2337 May 03 23:46	13°♍18'48	2°38'33
min. Earth dist.	2331 Feb 15 22:29	26°♏28'23	8.17903 AU	min. Earth dist.	2337 May 03 23:04	13°♍18'56	8.82329 AU
direct	2331 Apr 25 05:20	22°♏57'53		direct	2337 Jul 13 18:56	9°♍55'35	
	2331 Jul 31 12:06	0°♐			2337 Oct 05 13:17	15°♍	
evening set	2331 Aug 09 09:14	1°♐05'39		evening set	2337 Oct 26 05:50	17°♍19'57	
conjunction	2331 Aug 27 07:44	3°♐21'57	1°20'19	conjunction	2337 Nov 12 03:23	19°♍20'40	2°04'33
minimum elong	2331 Aug 27 07:41	3°♐21'56	1°20'19	minimum elong	2337 Nov 12 03:25	19°♍20'41	2°04'33
max. Earth dist.	2331 Aug 27 13:39	3°♐23'50	10.22368 AU	max. Earth dist.	2337 Nov 12 03:20	19°♍20'39	10.86791 AU
morning rise	2331 Sep 14 02:29	5°♐37'06		morning rise	2337 Nov 28 21:06	21°♍20'18	
retrograde	2331 Dec 25 01:51	13°♐26'16		retrograde	2338 Mar 08 08:57	28°♍25'18	
opposition	2332 Feb 29 20:08	10°♐01'36	1°54'32	opposition	2338 May 16 10:02	25°♍07'37	2°25'22
min. Earth dist.	2332 Feb 29 15:33	10°♐02'31	8.27280 AU	min. Earth dist.	2338 May 16 11:11	25°♍07'24	8.91085 AU
direct	2332 May 08 10:38	6°♐32'42		direct	2338 Jul 26 10:17	21°♍45'33	
evening set	2332 Aug 22 17:29	14°♐35'07		evening set	2338 Nov 07 05:04	29°♍02'58	
					2338 Nov 15 07:11	0°♏	
conjunction	2332 Sep 09 11:32	16°♐48'40	1°43'10	conjunction	2338 Nov 24 00:08	1°♏02'05	1°51'31
minimum elong	2332 Sep 09 11:29	16°♐48'39	1°43'11	minimum elong	2338 Nov 24 00:10	1°♏02'06	1°51'31
max. Earth dist.	2332 Sep 09 16:53	16°♐50'21	10.32451 AU	max. Earth dist.	2338 Nov 23 21:50	1°♏01'24	10.94682 AU
morning rise	2332 Sep 27 01:18	19°♐00'54		morning rise	2338 Dec 10 16:11	3°♏00'20	
retrograde	2333 Jan 06 07:39	26°♐41'25		retrograde	2339 Mar 20 05:35	10°♏01'39	
opposition	2333 Mar 14 07:39	23°♐18'13	2°19'02	opposition	2339 May 28 16:54	6°♏44'25	2°06'27
min. Earth dist.	2333 Mar 14 04:06	23°♐18'56	8.37986 AU	min. Earth dist.	2339 May 28 19:22	6°♏43'57	8.97995 AU
direct	2333 May 22 10:37	19°♐50'11		direct	2339 Aug 07 20:56	3°♏23'25	
evening set	2333 Sep 05 16:18	27°♐45'57		evening set	2339 Nov 18 22:02	10°♏34'54	
conjunction	2333 Sep 23 05:32	29°♐56'35	2°00'07	conjunction	2339 Dec 05 15:26	12°♏32'54	1°34'06
minimum elong	2333 Sep 23 05:29	29°♐56'34	2°00'06	minimum elong	2339 Dec 05 15:28	12°♏32'54	1°34'07
max. Earth dist.	2333 Sep 23 09:24	29°♐57'48	10.43566 AU	max. Earth dist.	2339 Dec 05 11:46	12°♏31'48	11.00587 AU
	2333 Sep 23 16:28	0°♑		morning rise	2339 Dec 22 06:29	14°♏30'13	
morning rise	2333 Oct 10 14:17	2°♑05'50		retrograde	2340 Mar 31 00:12	21°♏29'22	
retrograde	2334 Jan 19 05:49	9°♑37'46		opposition	2340 Jun 08 21:13	18°♏12'18	1°42'45
opposition	2334 Mar 27 13:32	6°♑16'00	2°35'45	min. Earth dist.	2340 Jun 09 00:02	18°♏11'47	9.02803 AU
min. Earth dist.	2334 Mar 27 10:48	6°♑16'32	8.49425 AU	direct	2340 Aug 19 01:40	14°♏52'15	
direct	2334 Jun 05 04:41	2°♑49'02		evening set	2340 Nov 29 10:23	21°♏59'00	
evening set	2334 Sep 19 04:52	10°♑37'16					
conjunction	2334 Oct 06 13:21	12°♑45'02	2°10'38	conjunction	2340 Dec 16 02:47	23°♏56'17	1°13'07
minimum elong	2334 Oct 06 13:20	12°♑45'01	2°10'38	minimum elong	2340 Dec 16 02:49	23°♏56'17	1°13'07
max. Earth dist.	2334 Oct 06 15:52	12°♑45'48	10.55119 AU	max. Earth dist.	2340 Dec 15 22:58	23°♏55'09	11.04326 AU
morning rise	2334 Oct 23 17:23	14°♑51'24		morning rise	2341 Jan 01 17:20	25°♏53'06	
retrograde	2335 Jan 31 20:05	22°♑15'14			2341 Feb 10 05:04	0°♒	
opposition	2335 Apr 09 14:06	18°♑54'46	2°44'23	retrograde	2341 Apr 11 20:09	2°♒51'39	
min. Earth dist.	2335 Apr 09 11:44	18°♑55'14	8.60998 AU		2341 Jun 15 05:19	30°♒♏	
direct	2335 Jun 18 17:23	15°♑29'01		opposition	2341 Jun 21 00:09	29°♏34'28	1°15'13
evening set	2335 Oct 02 06:47	23°♑09'14		min. Earth dist.	2341 Jun 21 03:35	29°♏33'50	9.05395 AU
				direct	2341 Aug 31 03:08	26°♏15'08	
conjunction	2335 Oct 19 11:01	25°♑14'17	2°14'40		2341 Nov 10 00:36	0°♒	
minimum elong	2335 Oct 19 11:01	25°♑14'17	2°14'40	evening set	2341 Dec 10 19:59	3°♒18'27	
max. Earth dist.	2335 Oct 19 12:57	25°♑14'53	10.66529 AU	conjunction	2341 Dec 27 11:40	5°♒15'24	0°49'22
morning rise	2335 Nov 05 10:49	27°♑18'02		minimum elong	2341 Dec 27 11:41	5°♒15'24	0°49'22
	2335 Nov 29 02:49	0°♓		max. Earth dist.	2341 Dec 27 06:54	5°♒14'00	11.05821 AU
retrograde	2336 Feb 13 05:50	4°♓34'34		morning rise	2342 Jan 13 02:16	7°♒12'06	
opposition	2336 Apr 21 09:24	1°♓15'13	2°45'08	retrograde	2342 Apr 23 15:49	14°♒11'31	
min. Earth dist.	2336 Apr 21 07:24	1°♓15'37	8.72139 AU	opposition	2342 Jul 03 02:39	10°♒53'58	0°44'53
	2336 May 08 03:22	30°♒♑		min. Earth dist.	2342 Jul 03 07:11	10°♒53'08	9.05740 AU
direct	2336 Jun 30 22:18	27°♑50'46		direct	2342 Sep 12 00:00	7°♒35'07	
	2336 Aug 22 05:36	0°♓		evening set	2342 Dec 22 04:21	14°♒36'21	
evening set	2336 Oct 13 22:48	5°♓22'52					
conjunction	2336 Oct 30 23:24	7°♓25'34	2°12'29	conjunction	2343 Jan 07 19:37	16°♒33'18	0°23'44
minimum elong	2336 Oct 30 23:25	7°♓25'34	2°12'28	minimum elong	2343 Jan 07 19:38	16°♒33'18	0°23'44
max. Earth dist.	2336 Oct 31 00:54	7°♓26'01	10.77255 AU	max. Earth dist.	2343 Jan 07 13:33	16°♒31'31	11.05077 AU
morning rise	2336 Nov 16 19:41	9°♓27'01		morning rise	2343 Jan 24 10:53	18°♒30'16	
	2337 Jan 11 13:02	15°♓		retrograde	2343 May 05 12:15	25°♒32'08	
retrograde	2337 Feb 24 10:23	16°♓37'12		opposition	2343 Jul 15 05:40	22°♒13'52	0°12'46
	2337 Apr 10 15:34	15°♒♓		min. Earth dist.	2343 Jul 15 10:58	22°♒12'54	9.03873 AU



direct	2343 Sep 23 21:37	18°♄55'15			2349 Apr 12 13:01	0°♄	
desc. node	2343 Dec 09 04:18	23°♄15'18		retrograde	2349 Jul 18 08:22	6°♄41'26	
evening set	2344 Jan 02 12:53	25°♄55'51		opposition	2349 Sep 26 11:58	3°♄15'45	-2°-32'-26
				min. Earth dist.	2349 Sep 26 14:12	3°♄15'19	8.55312 AU
conjunction	2344 Jan 19 04:17	27°♄53'11	0°-2'-58		2349 Nov 23 07:35	30°♄	
minimum elong	2344 Jan 19 04:16	27°♄53'11	0°03'00	direct	2349 Dec 03 12:30	29°♄54'28	
behind sun begin	2344 Jan 18 21:19	27°♄51'09			2349 Dec 13 15:02	0°♄	
behind sun end	2344 Jan 19 11:12	27°♄55'12		evening set	2350 Mar 13 14:57	7°♄20'59	
max. Earth dist.	2344 Jan 18 22:11	27°♄51'24	11.02138 AU				
morning rise	2344 Feb 04 20:26	29°♄50'45		conjunction	2350 Mar 30 15:35	9°♄27'28	-2°-8'-31
	2344 Feb 06 04:29	0°♄		minimum elong	2350 Mar 30 15:34	9°♄27'28	2°08'33
retrograde	2344 May 16 14:09	6°♄56'33		max. Earth dist.	2350 Mar 30 13:32	9°♄26'50	10.49549 AU
opposition	2344 Jul 26 09:57	3°♄37'21	0°-20'-2	morning rise	2350 Apr 16 20:33	11°♄35'22	
min. Earth dist.	2344 Jul 26 14:50	3°♄36'27	8.99864 AU	retrograde	2350 Aug 01 00:59	19°♄28'18	
direct	2344 Oct 04 19:09	0°♄18'45		opposition	2350 Oct 09 18:07	16°♄01'22	-2°-43'-25
evening set	2345 Jan 12 23:31	7°♄20'11		min. Earth dist.	2350 Oct 09 18:55	16°♄01'12	8.44032 AU
				direct	2350 Dec 16 06:12	12°♄39'06	
conjunction	2345 Jan 29 15:22	9°♄18'13	0°-29'-38	evening set	2351 Mar 26 19:06	20°♄13'37	
minimum elong	2345 Jan 29 15:21	9°♄18'13	0°29'39				
max. Earth dist.	2345 Jan 29 10:01	9°♄16'38	10.97104 AU	conjunction	2351 Apr 12 23:20	22°♄22'40	-2°-13'-58
morning rise	2345 Feb 15 08:36	11°♄16'44		minimum elong	2351 Apr 12 23:20	22°♄22'40	2°13'59
	2345 Mar 22 02:31	15°♄		max. Earth dist.	2351 Apr 12 22:00	22°♄22'15	10.38370 AU
retrograde	2345 May 28 19:30	18°♄27'53		morning rise	2351 Apr 30 08:12	24°♄33'13	
opposition	2345 Aug 07 16:28	15°♄07'34	0°-52'-25		2351 Jun 19 15:24	0°♄	
min. Earth dist.	2345 Aug 07 20:44	15°♄06'46	8.93856 AU	retrograde	2351 Aug 15 00:05	2°♄34'48	
	2345 Aug 09 09:07	15°♄			2351 Oct 11 23:26	30°♄	
direct	2345 Oct 16 15:13	11°♄48'49		opposition	2351 Oct 23 05:52	29°♄06'47	-2°-46'-18
	2345 Dec 19 07:55	15°♄		min. Earth dist.	2351 Oct 23 05:57	29°♄06'46	8.33135 AU
evening set	2346 Jan 24 13:47	18°♄52'36		direct	2351 Dec 29 07:37	25°♄43'27	
					2352 Mar 10 01:12	0°♄	
conjunction	2346 Feb 10 06:20	20°♄51'40	0°-55'-27	evening set	2352 Apr 08 09:14	3°♄26'18	
minimum elong	2346 Feb 10 06:18	20°♄51'39	0°55'27				
max. Earth dist.	2346 Feb 10 01:04	20°♄50'06	10.90165 AU	conjunction	2352 Apr 25 17:44	5°♄38'04	-2°-12'-30
morning rise	2346 Feb 27 01:03	22°♄51'26		minimum elong	2352 Apr 25 17:45	5°♄38'04	2°12'32
	2346 May 27 12:14	0°♄		max. Earth dist.	2352 Apr 25 17:16	5°♄37'55	10.27882 AU
retrograde	2346 Jun 10 07:02	0°♄09'18		morning rise	2352 May 13 06:56	7°♄51'19	
	2346 Jun 24 02:36	30°♄			2352 Jul 24 23:21	15°♄	
opposition	2346 Aug 20 02:32	26°♄47'44	-1°-23'-9	retrograde	2352 Aug 28 04:41	16°♄00'23	
min. Earth dist.	2346 Aug 20 06:38	26°♄46'58	8.86073 AU		2352 Oct 01 15:15	15°♄	
direct	2346 Oct 28 14:25	23°♄28'36		opposition	2352 Nov 04 23:08	12°♄31'34	-2°-40'-17
	2347 Jan 31 05:30	0°♄		min. Earth dist.	2352 Nov 04 22:33	12°♄31'41	8.23212 AU
evening set	2347 Feb 05 09:04	0°♄36'11		direct	2353 Jan 10 17:14	9°♄07'07	
					2353 Apr 06 07:16	15°♄	
conjunction	2347 Feb 22 02:40	2°♄36'37	-1°-19'-19	evening set	2353 Apr 22 08:59	16°♄58'03	
minimum elong	2347 Feb 22 02:38	2°♄36'36	1°19'20				
max. Earth dist.	2347 Feb 21 20:57	2°♄34'53	10.81581 AU	conjunction	2353 May 09 22:12	19°♄12'31	-2°-3'-45
morning rise	2347 Mar 10 23:24	4°♄37'59		minimum elong	2353 May 09 22:15	19°♄12'32	2°03'46
retrograde	2347 Jun 23 00:37	12°♄03'42		max. Earth dist.	2353 May 09 23:14	19°♄12'51	10.18678 AU
opposition	2347 Sep 01 16:46	8°♄40'47	-1°-50'-58	morning rise	2353 May 27 15:51	21°♄28'23	
min. Earth dist.	2347 Sep 01 21:02	8°♄39'59	8.76805 AU	retrograde	2353 Sep 11 14:33	29°♄43'14	
direct	2347 Nov 09 16:16	5°♄21'05		opposition	2353 Nov 18 21:07	26°♄13'53	-2°-25'-5
evening set	2348 Feb 17 10:57	12°♄33'52		min. Earth dist.	2353 Nov 18 19:35	26°♄14'12	8.14848 AU
				direct	2354 Jan 24 09:55	22°♄48'21	
conjunction	2348 Mar 05 06:15	14°♄36'00	-1°-40'-11		2354 Apr 30 13:11	0°♄	
minimum elong	2348 Mar 05 06:13	14°♄35'59	1°40'12	evening set	2354 May 06 17:57	0°♄46'42	
max. Earth dist.	2348 Mar 05 01:14	14°♄34'28	10.71672 AU				
morning rise	2348 Mar 22 05:18	16°♄39'16		conjunction	2354 May 24 12:05	3°♄03'40	-1°-47'-46
retrograde	2348 Jul 04 23:44	24°♄13'41		minimum elong	2354 May 24 12:08	3°♄03'41	1°47'47
opposition	2348 Sep 13 11:36	20°♄49'23	-2°-14'-31	max. Earth dist.	2354 May 24 15:06	3°♄04'39	10.11317 AU
min. Earth dist.	2348 Sep 13 15:13	20°♄48'42	8.66407 AU	morning rise	2354 Jun 11 09:55	5°♄21'51	
direct	2348 Nov 20 23:41	17°♄28'57		retrograde	2354 Sep 26 03:38	13°♄40'11	
evening set	2349 Feb 28 20:34	24°♄48'09		opposition	2354 Dec 02 22:37	10°♄10'37	-2°-1'-6
				min. Earth dist.	2354 Dec 02 19:44	10°♄11'12	8.08559 AU
conjunction	2349 Mar 17 18:15	26°♄52'19	-1°-56'-56	direct	2355 Feb 07 09:20	6°♄44'04	
minimum elong	2349 Mar 17 18:13	26°♄52'18	1°56'58	evening set	2355 May 21 10:46	14°♄48'41	
max. Earth dist.	2349 Mar 17 14:46	26°♄51'14	10.60835 AU				
morning rise	2349 Apr 03 19:57	28°♄57'45		conjunction	2355 Jun 08 09:23	17°♄07'42	-1°-25'-13



minimum elong	2355 Jun 08 09:26	17° $\Pi$ 07'44	1°25'13	minimum elong	2361 Sep 03 18:02	11° $\eta$ 15'44	1°33'54
max. Earth dist.	2355 Jun 08 14:15	17° $\Pi$ 09'17	10.06248 AU	max. Earth dist.	2361 Sep 03 21:43	11° $\eta$ 16'55	10.28226 AU
morning rise	2355 Jun 26 10:40	19° $\Pi$ 27'38		morning rise	2361 Sep 21 10:16	13° $\eta$ 29'20	
retrograde	2355 Oct 10 17:55	27° $\Pi$ 46'54		retrograde	2361 Dec 31 23:50	21° $\eta$ 13'58	
opposition	2355 Dec 17 02:29	24° $\Pi$ 17'28	-1°-29'-33	opposition	2362 Mar 08 21:09	17° $\eta$ 50'24	2°09'17
min. Earth dist.	2355 Dec 16 22:17	24° $\Pi$ 18'20	8.04729 AU	min. Earth dist.	2362 Mar 08 17:35	17° $\eta$ 51'07	8.33317 AU
direct	2356 Feb 21 14:27	20° $\Pi$ 49'59		direct	2362 May 16 18:58	14° $\eta$ 22'13	
evening set	2356 Jun 04 09:21	28° $\Pi$ 59'18		evening set	2362 Aug 31 01:39	22° $\eta$ 21'19	
	2356 Jun 12 06:14	0° $\mathfrak{C}$					
conjunction	2356 Jun 22 11:23	1° $\mathfrak{C}$ 19'41	0°-57'-21	conjunction	2362 Sep 17 17:08	24° $\eta$ 33'19	1°53'31
minimum elong	2356 Jun 22 11:26	1° $\mathfrak{C}$ 19'42	0°57'21	minimum elong	2362 Sep 17 17:05	24° $\eta$ 33'18	1°53'31
max. Earth dist.	2356 Jun 22 17:27	1° $\mathfrak{C}$ 21'40	10.03773 AU	max. Earth dist.	2362 Sep 17 20:39	24° $\eta$ 34'25	10.38536 AU
morning rise	2356 Jul 10 14:54	3° $\mathfrak{C}$ 40'35		morning rise	2362 Oct 05 04:07	26° $\eta$ 43'56	
retrograde	2356 Oct 24 06:51	11° $\mathfrak{C}$ 58'14			2362 Nov 02 08:44	0° $\mathfrak{C}$	
opposition	2356 Dec 30 07:11	8° $\mathfrak{C}$ 29'13	0°-52'-19	retrograde	2363 Jan 14 02:27	4° $\mathfrak{C}$ 19'57	
min. Earth dist.	2356 Dec 30 02:16	8° $\mathfrak{C}$ 30'14	8.03572 AU	opposition	2363 Mar 22 05:50	0° $\mathfrak{C}$ 57'38	2°29'29
direct	2357 Mar 06 22:53	5° $\mathfrak{C}$ 00'58		min. Earth dist.	2363 Mar 22 02:40	0° $\mathfrak{C}$ 58'16	8.44082 AU
evening set	2357 Jun 19 11:14	13° $\mathfrak{C}$ 13'07			2363 Apr 03 13:04	30° $\mathfrak{R}$ $\eta$	
				direct	2363 May 30 15:42	27° $\eta$ 30'14	
conjunction	2357 Jul 07 15:15	15° $\mathfrak{C}$ 34'01	0°-25'-56		2363 Jul 25 08:03	0° $\mathfrak{C}$	
minimum elong	2357 Jul 07 15:16	15° $\mathfrak{C}$ 34'01	0°25'57	evening set	2363 Sep 13 19:06	5° $\mathfrak{C}$ 22'11	
max. Earth dist.	2357 Jul 07 21:38	15° $\mathfrak{C}$ 36'05	10.03995 AU	conjunction	2363 Oct 01 05:51	7° $\mathfrak{C}$ 31'17	2°06'52
morning rise	2357 Jul 25 19:30	17° $\mathfrak{C}$ 55'00		minimum elong	2363 Oct 01 05:49	7° $\mathfrak{C}$ 31'17	2°06'52
retrograde	2357 Nov 07 17:29	26° $\mathfrak{C}$ 08'43		max. Earth dist.	2363 Oct 01 09:02	7° $\mathfrak{C}$ 32'17	10.49560 AU
opposition	2358 Jan 13 11:09	22° $\mathfrak{C}$ 40'25	0°-11'-55	morning rise	2363 Oct 18 11:47	9° $\mathfrak{C}$ 38'58	
min. Earth dist.	2358 Jan 13 06:25	22° $\mathfrak{C}$ 41'24	8.05085 AU	retrograde	2364 Jan 26 20:58	17° $\mathfrak{C}$ 06'39	
direct	2358 Mar 21 09:17	19° $\mathfrak{C}$ 11'34		opposition	2364 Apr 03 09:08	13° $\mathfrak{C}$ 45'31	2°41'40
asc. node	2358 May 03 12:20	20° $\mathfrak{C}$ 50'41		min. Earth dist.	2364 Apr 03 07:05	13° $\mathfrak{C}$ 45'55	8.55276 AU
evening set	2358 Jul 04 13:40	27° $\mathfrak{C}$ 24'43		direct	2364 Jun 12 06:29	10° $\mathfrak{C}$ 19'04	
				evening set	2364 Sep 26 01:50	18° $\mathfrak{C}$ 03'08	
conjunction	2358 Jul 22 18:00	29° $\mathfrak{C}$ 45'14	0°07'01	conjunction	2364 Oct 13 08:01	20° $\mathfrak{C}$ 09'28	2°13'44
minimum elong	2358 Jul 22 18:00	29° $\mathfrak{C}$ 45'14	0°07'01	minimum elong	2364 Oct 13 08:00	20° $\mathfrak{C}$ 09'28	2°13'43
behind sun begin	2358 Jul 22 11:13	29° $\mathfrak{C}$ 43'03		max. Earth dist.	2364 Oct 13 09:55	20° $\mathfrak{C}$ 10'03	10.60733 AU
behind sun end	2358 Jul 23 00:47	29° $\mathfrak{C}$ 47'25		morning rise	2364 Oct 30 09:34	22° $\mathfrak{C}$ 14'26	
max. Earth dist.	2358 Jul 22 23:39	29° $\mathfrak{C}$ 47'03	10.06785 AU	retrograde	2365 Feb 07 08:08	29° $\mathfrak{C}$ 34'23	
	2358 Jul 24 15:32	0° $\mathfrak{Q}$		opposition	2365 Apr 16 06:52	26° $\mathfrak{C}$ 14'18	2°45'49
morning rise	2358 Aug 09 21:21	2° $\mathfrak{Q}$ 05'26		min. Earth dist.	2365 Apr 16 06:03	26° $\mathfrak{C}$ 14'27	8.66336 AU
retrograde	2358 Nov 21 23:29	10° $\mathfrak{Q}$ 13'26		direct	2365 Jun 25 15:09	22° $\mathfrak{C}$ 48'53	
opposition	2359 Jan 27 13:13	6° $\mathfrak{Q}$ 46'09	0°28'55		2365 Oct 05 10:19	0° $\mathfrak{M}$	
min. Earth dist.	2359 Jan 27 09:18	6° $\mathfrak{Q}$ 46'57	8.09067 AU	evening set	2365 Oct 08 22:20	0° $\mathfrak{M}$ 24'52	
direct	2359 Apr 04 20:48	3° $\mathfrak{Q}$ 17'01					
evening set	2359 Jul 19 14:04	11° $\mathfrak{Q}$ 29'21		conjunction	2365 Oct 26 00:27	2° $\mathfrak{M}$ 28'41	2°14'12
				minimum elong	2365 Oct 26 00:27	2° $\mathfrak{M}$ 28'41	2°14'11
conjunction	2359 Aug 06 16:55	13° $\mathfrak{Q}$ 48'38	0°39'11	max. Earth dist.	2365 Oct 26 00:43	2° $\mathfrak{M}$ 28'46	10.71515 AU
minimum elong	2359 Aug 06 16:53	13° $\mathfrak{Q}$ 48'37	0°39'12	morning rise	2365 Nov 11 22:22	4° $\mathfrak{M}$ 31'13	
max. Earth dist.	2359 Aug 06 21:27	13° $\mathfrak{Q}$ 50'06	10.11920 AU	retrograde	2366 Feb 19 13:20	11° $\mathfrak{M}$ 44'19	
	2359 Aug 15 22:38	15° $\mathfrak{Q}$		opposition	2366 Apr 28 23:17	8° $\mathfrak{M}$ 25'07	2°42'21
morning rise	2359 Aug 24 17:42	16° $\mathfrak{Q}$ 07'14		min. Earth dist.	2366 Apr 28 23:12	8° $\mathfrak{M}$ 25'08	8.76742 AU
retrograde	2359 Dec 05 23:00	24° $\mathfrak{Q}$ 08'15		direct	2366 Jul 08 16:21	5° $\mathfrak{M}$ 00'51	
opposition	2360 Feb 10 12:10	20° $\mathfrak{Q}$ 42'09	1°07'32	evening set	2366 Oct 21 09:11	12° $\mathfrak{M}$ 28'54	
min. Earth dist.	2360 Feb 10 08:42	20° $\mathfrak{Q}$ 42'51	8.15314 AU				
direct	2360 Apr 18 07:46	17° $\mathfrak{Q}$ 13'03		conjunction	2366 Nov 07 08:00	14° $\mathfrak{M}$ 30'34	2°08'41
evening set	2360 Aug 02 09:41	25° $\mathfrak{Q}$ 22'42		minimum elong	2366 Nov 07 08:01	14° $\mathfrak{M}$ 30'34	2°08'40
				max. Earth dist.	2366 Nov 07 07:21	14° $\mathfrak{M}$ 30'22	10.81429 AU
conjunction	2360 Aug 20 09:37	27° $\mathfrak{Q}$ 40'01	1°08'43		2366 Nov 11 09:44	15° $\mathfrak{M}$	
minimum elong	2360 Aug 20 09:34	27° $\mathfrak{Q}$ 40'00	1°08'43	morning rise	2366 Nov 24 02:59	16° $\mathfrak{M}$ 31'05	
max. Earth dist.	2360 Aug 20 13:31	27° $\mathfrak{Q}$ 41'15	10.19186 AU	retrograde	2367 Mar 03 13:54	23° $\mathfrak{M}$ 38'28	
morning rise	2360 Sep 07 06:32	29° $\mathfrak{Q}$ 56'20		opposition	2367 May 11 11:17	20° $\mathfrak{M}$ 19'58	2°31'55
	2360 Sep 07 18:14	0° $\mathfrak{M}$		min. Earth dist.	2367 May 11 11:13	20° $\mathfrak{M}$ 19'59	8.86052 AU
retrograde	2360 Dec 18 14:30	7° $\mathfrak{M}$ 49'25		direct	2367 Jul 21 11:22	16° $\mathfrak{M}$ 56'51	
opposition	2361 Feb 23 07:05	4° $\mathfrak{M}$ 24'35	1°41'35	evening set	2367 Nov 02 11:25	24° $\mathfrak{M}$ 17'30	
min. Earth dist.	2361 Feb 23 03:36	4° $\mathfrak{M}$ 25'17	8.23546 AU				
direct	2361 May 02 16:19	0° $\mathfrak{M}$ 55'49		conjunction	2367 Nov 19 07:41	26° $\mathfrak{M}$ 17'23	1°57'46
evening set	2361 Aug 16 22:04	9° $\mathfrak{M}$ 00'57		minimum elong	2367 Nov 19 07:43	26° $\mathfrak{M}$ 17'24	1°57'46
				max. Earth dist.	2367 Nov 19 07:07	26° $\mathfrak{M}$ 17'13	10.90064 AU
conjunction	2361 Sep 03 18:05	11° $\mathfrak{M}$ 15'45	1°33'53				



morning rise	2367 Dec 06 00:27	28° $\mathbb{M}$ 16'18		conjunction	2374 Jan 24 23:21	4° $\approx$ 30'59	0°-17'-55
	2367 Dec 21 05:04	0° $\mathcal{A}$		minimum elong	2374 Jan 24 23:21	4° $\approx$ 30'59	0°17'56
retrograde	2368 Mar 14 12:55	5° $\mathcal{A}$ 19'17		max. Earth dist.	2374 Jan 24 18:35	4° $\approx$ 29'35	11.01479 AU
opposition	2368 May 22 19:26	2° $\mathcal{A}$ 01'19	2°15'21	morning rise	2374 Feb 10 16:01	6° $\approx$ 28'48	
min. Earth dist.	2368 May 22 20:01	2° $\mathcal{A}$ 01'12	8.93897 AU	retrograde	2374 May 23 17:45	13° $\approx$ 36'25	
	2368 Jun 20 19:39	30° $\mathbb{R}$ $\mathbb{M}$		opposition	2374 Aug 02 15:32	10° $\approx$ 17'04	0°-38'-12
direct	2368 Aug 01 23:22	28° $\mathbb{M}$ 39'20		min. Earth dist.	2374 Aug 02 19:32	10° $\approx$ 16'20	8.98972 AU
	2368 Sep 12 05:38	0° $\mathcal{A}$		direct	2374 Oct 11 17:50	6° $\approx$ 58'54	
evening set	2368 Nov 13 06:50	5° $\mathcal{A}$ 53'24		evening set	2375 Jan 19 19:49	14° $\approx$ 00'31	
					2375 Jan 28 06:12	15° $\approx$	
conjunction	2368 Nov 30 01:07	7° $\mathcal{A}$ 51'57	1°42'09	conjunction	2375 Feb 05 11:46	15° $\approx$ 58'46	0°-44'-10
minimum elong	2368 Nov 30 01:10	7° $\mathcal{A}$ 51'58	1°42'10	minimum elong	2375 Feb 05 11:45	15° $\approx$ 58'45	0°44'10
max. Earth dist.	2368 Nov 29 23:44	7° $\mathcal{A}$ 51'32	10.97086 AU	max. Earth dist.	2375 Feb 05 07:03	15° $\approx$ 57'22	10.95989 AU
morning rise	2368 Dec 16 16:30	9° $\mathcal{A}$ 49'42		morning rise	2375 Feb 22 05:46	17° $\approx$ 57'37	
retrograde	2369 Mar 26 07:23	16° $\mathcal{A}$ 49'37		retrograde	2375 Jun 05 01:53	25° $\approx$ 11'12	
opposition	2369 Jun 04 00:28	13° $\mathcal{A}$ 32'00	1°53'36	opposition	2375 Aug 14 23:12	21° $\approx$ 50'49	-1°-9'-41
min. Earth dist.	2369 Jun 04 02:25	13° $\mathcal{A}$ 31'38	8.99986 AU	min. Earth dist.	2375 Aug 15 02:56	21° $\approx$ 50'08	8.92541 AU
direct	2369 Aug 14 04:37	10° $\mathcal{A}$ 11'04		direct	2375 Oct 23 17:01	18° $\approx$ 32'32	
evening set	2369 Nov 24 20:55	17° $\mathcal{A}$ 19'42		evening set	2376 Jan 31 11:57	25° $\approx$ 37'06	
conjunction	2369 Dec 11 13:41	19° $\mathcal{A}$ 17'16	1°22'37	conjunction	2376 Feb 17 04:58	27° $\approx$ 36'31	-1°-8'-56
minimum elong	2369 Dec 11 13:43	19° $\mathcal{A}$ 17'17	1°22'38	minimum elong	2376 Feb 17 04:56	27° $\approx$ 36'31	1°08'57
max. Earth dist.	2369 Dec 11 10:38	19° $\mathcal{A}$ 16'22	11.02235 AU	max. Earth dist.	2376 Feb 17 01:08	27° $\approx$ 35'22	10.88640 AU
morning rise	2369 Dec 28 04:29	21° $\mathcal{A}$ 14'17		morning rise	2376 Mar 05 00:31	29° $\approx$ 36'45	
retrograde	2370 Apr 07 01:04	28° $\mathcal{A}$ 12'40			2376 Mar 08 08:08	0° $\mathcal{H}$	
opposition	2370 Jun 16 03:37	24° $\mathcal{A}$ 55'11	1°27'36	retrograde	2376 Jun 16 16:17	6° $\mathcal{H}$ 57'28	
min. Earth dist.	2370 Jun 16 06:30	24° $\mathcal{A}$ 54'39	9.04095 AU	opposition	2376 Aug 26 10:29	3° $\mathcal{H}$ 35'54	-1°-38'-50
direct	2370 Aug 26 07:51	21° $\mathcal{A}$ 35'10		min. Earth dist.	2376 Aug 26 13:25	3° $\mathcal{H}$ 35'21	8.84367 AU
evening set	2370 Dec 06 07:03	28° $\mathcal{A}$ 39'35		direct	2376 Nov 03 16:22	0° $\mathcal{H}$ 17'16	
	2370 Dec 17 18:48	0° $\mathcal{B}$		evening set	2377 Feb 11 09:58	7° $\mathcal{H}$ 26'11	
conjunction	2370 Dec 22 22:54	0° $\mathcal{B}$ 36'34	0°59'59	conjunction	2377 Feb 28 04:19	9° $\mathcal{H}$ 27'05	-1°-31'-11
minimum elong	2370 Dec 22 22:56	0° $\mathcal{B}$ 36'35	1°00'00	minimum elong	2377 Feb 28 04:16	9° $\mathcal{H}$ 27'04	1°31'12
max. Earth dist.	2370 Dec 22 19:15	0° $\mathcal{B}$ 35'30	11.05322 AU	max. Earth dist.	2377 Feb 28 00:28	9° $\mathcal{H}$ 25'55	10.79659 AU
morning rise	2371 Jan 08 13:34	2° $\mathcal{B}$ 33'14		morning rise	2377 Mar 17 01:52	11° $\mathcal{H}$ 29'00	
retrograde	2371 Apr 18 19:58	9° $\mathcal{B}$ 31'39		retrograde	2377 Jun 29 12:28	18° $\mathcal{H}$ 57'52	
opposition	2371 Jun 28 05:42	6° $\mathcal{B}$ 14'02	0°58'23	opposition	2377 Sep 08 02:12	15° $\mathcal{H}$ 34'59	-2°-4'-19
min. Earth dist.	2371 Jun 28 08:27	6° $\mathcal{B}$ 13'32	9.06077 AU	min. Earth dist.	2377 Sep 08 05:03	15° $\mathcal{H}$ 34'27	8.74705 AU
direct	2371 Sep 07 07:02	2° $\mathcal{B}$ 54'49		direct	2377 Nov 15 19:38	12° $\mathcal{H}$ 15'44	
evening set	2371 Dec 17 15:09	9° $\mathcal{B}$ 56'19		evening set	2378 Feb 23 15:04	19° $\mathcal{H}$ 30'21	
conjunction	2372 Jan 03 06:39	11° $\mathcal{B}$ 53'07	0°35'06	conjunction	2378 Mar 12 11:15	21° $\mathcal{H}$ 33'05	-1°-49'-50
minimum elong	2372 Jan 03 06:40	11° $\mathcal{B}$ 53'07	0°35'06	minimum elong	2378 Mar 12 11:13	21° $\mathcal{H}$ 33'04	1°49'52
max. Earth dist.	2372 Jan 03 03:18	11° $\mathcal{B}$ 52'08	11.06234 AU	max. Earth dist.	2378 Mar 12 06:46	21° $\mathcal{H}$ 31'42	10.69348 AU
morning rise	2372 Jan 19 21:31	13° $\mathcal{B}$ 49'48		morning rise	2378 Mar 29 11:25	23° $\mathcal{H}$ 37'02	
retrograde	2372 Apr 29 16:33	20° $\mathcal{B}$ 49'47			2378 Jun 03 11:30	0° $\mathcal{Y}$	
opposition	2372 Jul 09 07:34	17° $\mathcal{B}$ 31'48	0°26'58	retrograde	2378 Jul 12 16:32	1° $\mathcal{Y}$ 14'47	
min. Earth dist.	2372 Jul 09 10:16	17° $\mathcal{B}$ 31'18	9.05864 AU		2378 Aug 21 11:15	30° $\mathbb{R}$ $\mathcal{H}$	
direct	2372 Sep 18 03:40	14° $\mathcal{B}$ 13'10		opposition	2378 Sep 20 23:06	27° $\mathcal{H}$ 50'34	-2°-24'-50
evening set	2372 Dec 27 22:56	21° $\mathcal{B}$ 13'13		min. Earth dist.	2378 Sep 21 02:16	27° $\mathcal{H}$ 49'58	8.63892 AU
				direct	2378 Nov 28 04:19	24° $\mathcal{H}$ 30'28	
conjunction	2373 Jan 13 14:17	23° $\mathcal{B}$ 10'11	0°08'52		2379 Feb 20 07:25	0° $\mathcal{Y}$	
minimum elong	2373 Jan 13 14:18	23° $\mathcal{B}$ 10'11	0°08'52	evening set	2379 Mar 08 04:17	1° $\mathcal{Y}$ 51'58	
behind sun begin	2373 Jan 13 08:16	23° $\mathcal{B}$ 08'25					
behind sun end	2373 Jan 13 20:19	23° $\mathcal{B}$ 11'56		conjunction	2379 Mar 25 03:07	3° $\mathcal{Y}$ 56'53	-2°-3'-50
max. Earth dist.	2373 Jan 13 10:36	23° $\mathcal{B}$ 09'07	11.04935 AU	minimum elong	2379 Mar 25 03:05	3° $\mathcal{Y}$ 56'52	2°03'51
morning rise	2373 Jan 30 05:50	25° $\mathcal{B}$ 07'15		max. Earth dist.	2379 Mar 24 22:39	3° $\mathcal{Y}$ 55'30	10.58105 AU
	2373 Mar 19 20:48	0° $\approx$		morning rise	2379 Apr 11 06:25	6° $\mathcal{Y}$ 03'11	
retrograde	2373 May 11 16:24	2° $\approx$ 10'18		retrograde	2379 Jul 26 03:09	13° $\mathcal{Y}$ 50'13	
desc. node	2373 May 17 20:48	2° $\approx$ 08'26		opposition	2379 Oct 04 01:32	10° $\mathcal{Y}$ 24'39	-2°-39'-4
	2373 Jul 05 16:39	30° $\mathbb{R}$ $\mathcal{B}$		min. Earth dist.	2379 Oct 04 04:36	10° $\mathcal{Y}$ 24'03	8.52407 AU
opposition	2373 Jul 21 10:34	28° $\mathcal{B}$ 51'45	0°-5'-36	direct	2379 Dec 10 19:09	7° $\mathcal{Y}$ 03'31	
min. Earth dist.	2373 Jul 21 13:57	28° $\mathcal{B}$ 51'08	9.03465 AU	evening set	2380 Mar 20 02:47	14° $\mathcal{Y}$ 32'49	
direct	2373 Sep 29 22:42	25° $\mathcal{B}$ 33'28					
	2373 Dec 16 03:05	0° $\approx$		conjunction	2380 Apr 06 05:03	16° $\mathcal{Y}$ 40'12	-2°-12'-10
evening set	2374 Jan 08 07:58	2° $\approx$ 33'33		minimum elong	2380 Apr 06 05:02	16° $\mathcal{Y}$ 40'12	2°12'11



max. Earth dist.	2380 Apr 06 01:56	16° $\Upsilon$ 39'14	10.46489 AU	morning rise	2386 Jul 18 23:23	11° $\Theta$ 23'49	
morning rise	2380 Apr 23 11:52	18° $\Upsilon$ 49'04		retrograde	2386 Nov 01 05:05	19° $\Theta$ 39'44	
retrograde	2380 Aug 07 20:39	26° $\Upsilon$ 45'11		opposition	2387 Jan 07 02:51	16° $\Theta$ 10'32	0°-31'-31
opposition	2380 Oct 16 09:29	23° $\Upsilon$ 18'18	-2°-45'-47	min. Earth dist.	2387 Jan 06 23:23	16° $\Theta$ 11'16	8.02983 AU
min. Earth dist.	2380 Oct 16 11:27	23° $\Upsilon$ 17'54	8.40864 AU	direct	2387 Mar 14 22:55	12° $\Theta$ 41'22	
direct	2380 Dec 22 17:31	19° $\Upsilon$ 56'01		evening set	2387 Jun 27 18:05	20° $\Theta$ 54'27	
evening set	2381 Apr 02 11:00	27° $\Upsilon$ 33'34					
conjunction	2381 Apr 19 17:21	29° $\Upsilon$ 43'40	-2°-13'-59	conjunction	2387 Jul 15 22:35	23° $\Theta$ 15'23	0°-8'-54
minimum elong	2381 Apr 19 17:22	29° $\Upsilon$ 43'40	2°14'00	minimum elong	2387 Jul 15 22:36	23° $\Theta$ 15'24	0°08'55
max. Earth dist.	2381 Apr 19 15:53	29° $\Upsilon$ 43'12	10.35144 AU	behind sun begin	2387 Jul 15 16:19	23° $\Theta$ 13'23	
	2381 Apr 21 20:59	0° $\Upsilon$		behind sun end	2387 Jul 16 04:52	23° $\Theta$ 17'25	
morning rise	2381 May 07 04:10	1° $\Upsilon$ 55'14		max. Earth dist.	2387 Jul 16 03:30	23° $\Theta$ 16'58	10.03881 AU
retrograde	2381 Aug 21 21:44	9° $\Upsilon$ 59'37		morning rise	2387 Aug 03 02:45	25° $\Theta$ 36'13	
opposition	2381 Oct 29 23:08	6° $\Upsilon$ 31'33	-2°-44'-2		2387 Sep 09 15:31	0° $\Omega$	
min. Earth dist.	2381 Oct 29 23:36	6° $\Upsilon$ 31'28	8.29905 AU	asc. node	2387 Oct 26 01:40	3° $\Omega$ 24'02	
direct	2382 Jan 04 22:19	3° $\Upsilon$ 08'00		retrograde	2387 Nov 15 13:17	3° $\Omega$ 47'32	
evening set	2382 Apr 16 05:02	10° $\Upsilon$ 53'50		opposition	2388 Jan 21 05:55	0° $\Omega$ 19'07	0°09'26
				min. Earth dist.	2388 Jan 21 01:31	0° $\Omega$ 20'01	8.05469 AU
conjunction	2382 May 03 15:57	13° $\Upsilon$ 06'44	-2°-8'-41		2388 Jan 25 02:37	30° $\Upsilon$	
minimum elong	2382 May 03 15:59	13° $\Upsilon$ 06'44	2°08'42	direct	2388 Mar 28 10:17	26° $\Theta$ 49'29	
max. Earth dist.	2382 May 03 15:51	13° $\Upsilon$ 06'42	10.24713 AU	evening set	2388 May 28 13:46	0° $\Omega$	
	2382 May 18 12:08	15° $\Upsilon$			2388 Jul 11 19:35	5° $\Omega$ 02'45	
morning rise	2382 May 21 07:11	15° $\Upsilon$ 21'02		conjunction	2388 Jul 29 23:33	7° $\Omega$ 22'54	0°23'57
retrograde	2382 Sep 05 05:47	23° $\Upsilon$ 32'12		minimum elong	2388 Jul 29 23:32	7° $\Omega$ 22'54	0°23'57
opposition	2382 Nov 12 17:52	20° $\Upsilon$ 03'14	-2°-33'-14	max. Earth dist.	2388 Jul 30 05:21	7° $\Omega$ 24'46	10.07725 AU
min. Earth dist.	2382 Nov 12 17:10	20° $\Upsilon$ 03'23	8.20148 AU	morning rise	2388 Aug 17 01:48	9° $\Omega$ 42'31	
direct	2383 Jan 18 09:05	16° $\Upsilon$ 38'21			2388 Oct 03 01:57	15° $\Omega$	
evening set	2383 Apr 30 08:43	24° $\Upsilon$ 32'08		retrograde	2388 Nov 28 16:05	17° $\Omega$ 47'30	
					2389 Jan 26 03:28	15° $\Upsilon$	
conjunction	2383 May 18 00:26	26° $\Upsilon$ 47'42	-1°-56'-8	opposition	2389 Feb 03 06:32	14° $\Omega$ 20'08	0°49'27
minimum elong	2383 May 18 00:29	26° $\Upsilon$ 47'43	1°56'08	min. Earth dist.	2389 Feb 03 01:44	14° $\Omega$ 21'07	8.10601 AU
max. Earth dist.	2383 May 18 01:11	26° $\Upsilon$ 47'56	10.15791 AU	direct	2389 Apr 11 21:12	10° $\Omega$ 50'24	
morning rise	2383 Jun 04 20:07	29° $\Upsilon$ 04'33			2389 Jun 22 07:26	15° $\Omega$	
	2383 Jun 12 05:48	0° $\Upsilon$		evening set	2389 Jul 26 17:46	19° $\Omega$ 01'50	
retrograde	2383 Sep 19 16:41	7° $\Upsilon$ 20'30					
opposition	2383 Nov 26 16:44	3° $\Upsilon$ 50'57	-2°-13'-25	conjunction	2389 Aug 13 19:32	21° $\Omega$ 20'20	0°55'00
min. Earth dist.	2383 Nov 26 15:24	3° $\Upsilon$ 51'14	8.12160 AU	minimum elong	2389 Aug 13 19:30	21° $\Omega$ 20'19	0°55'00
direct	2384 Feb 01 04:22	0° $\Upsilon$ 24'45		max. Earth dist.	2389 Aug 14 01:28	21° $\Omega$ 22'15	10.14059 AU
evening set	2384 May 13 20:56	8° $\Upsilon$ 25'40		morning rise	2389 Aug 31 18:26	23° $\Omega$ 37'58	
					2389 Oct 31 11:36	0° $\Upsilon$	
conjunction	2384 May 31 17:17	10° $\Upsilon$ 43'35	-1°-36'-39	retrograde	2389 Dec 12 12:24	1° $\Upsilon$ 35'20	
minimum elong	2384 May 31 17:20	10° $\Upsilon$ 43'36	1°36'40		2390 Jan 24 05:19	30° $\Upsilon$	
max. Earth dist.	2384 May 31 18:47	10° $\Upsilon$ 44'04	10.08906 AU	opposition	2390 Feb 17 03:27	28° $\Omega$ 09'15	1°25'58
morning rise	2384 Jun 18 16:58	13° $\Upsilon$ 02'35		min. Earth dist.	2390 Feb 16 23:04	28° $\Omega$ 10'09	8.18057 AU
retrograde	2384 Oct 03 05:20	21° $\Upsilon$ 21'00		direct	2390 Apr 26 05:39	24° $\Omega$ 39'45	
opposition	2384 Dec 09 18:53	17° $\Upsilon$ 51'12	-1°-45'-24		2390 Jul 18 01:44	0° $\Upsilon$	
min. Earth dist.	2384 Dec 09 17:05	17° $\Upsilon$ 51'35	8.06428 AU	evening set	2390 Aug 10 10:03	2° $\Upsilon$ 47'30	
direct	2385 Feb 14 06:26	14° $\Upsilon$ 23'49					
evening set	2385 May 28 15:52	22° $\Upsilon$ 30'30		conjunction	2390 Aug 28 08:14	5° $\Upsilon$ 03'42	1°22'26
				minimum elong	2390 Aug 28 08:10	5° $\Upsilon$ 03'41	1°22'26
conjunction	2385 Jun 15 16:13	24° $\Upsilon$ 50'15	-1°-11'-13	max. Earth dist.	2390 Aug 28 13:26	5° $\Upsilon$ 05'22	10.22488 AU
minimum elong	2385 Jun 15 16:16	24° $\Upsilon$ 50'16	1°11'13	morning rise	2390 Sep 15 02:44	7° $\Upsilon$ 18'46	
max. Earth dist.	2385 Jun 15 18:56	24° $\Upsilon$ 51'08	10.04477 AU	retrograde	2390 Dec 26 01:58	15° $\Upsilon$ 07'47	
morning rise	2385 Jul 03 18:57	27° $\Upsilon$ 10'43		opposition	2391 Mar 02 20:01	11° $\Upsilon$ 43'08	1°56'53
	2385 Jul 26 21:01	0° $\Theta$		min. Earth dist.	2391 Mar 02 16:18	11° $\Upsilon$ 43'53	8.27377 AU
retrograde	2385 Oct 17 17:50	5° $\Theta$ 29'08		direct	2391 May 10 10:22	8° $\Upsilon$ 14'11	
opposition	2385 Dec 23 22:47	1° $\Theta$ 59'28	-1°-10'-41	evening set	2391 Aug 24 18:08	16° $\Upsilon$ 16'37	
min. Earth dist.	2385 Dec 23 20:12	2° $\Theta$ 00'00	8.03306 AU				
	2386 Jan 18 15:16	30° $\Upsilon$		conjunction	2391 Sep 11 11:49	18° $\Upsilon$ 30'05	1°44'49
direct	2386 Feb 28 13:19	28° $\Upsilon$ 31'03		minimum elong	2391 Sep 11 11:46	18° $\Upsilon$ 30'04	1°44'49
	2386 Apr 09 23:04	0° $\Theta$		max. Earth dist.	2391 Sep 11 16:02	18° $\Upsilon$ 31'25	10.32508 AU
evening set	2386 Jun 12 15:49	6° $\Theta$ 41'53		morning rise	2391 Sep 29 01:23	20° $\Upsilon$ 42'15	
				retrograde	2392 Jan 08 07:02	20° $\Upsilon$ 22'40	
conjunction	2386 Jun 30 19:03	9° $\Theta$ 02'41	0°-41'-18	opposition	2392 Mar 15 07:29	24° $\Upsilon$ 59'29	2°20'45
minimum elong	2386 Jun 30 19:05	9° $\Theta$ 02'42	0°41'19	min. Earth dist.	2392 Mar 15 04:17	25° $\Upsilon$ 00'07	8.38018 AU
max. Earth dist.	2386 Jun 30 22:56	9° $\Theta$ 03'57	10.02771 AU	direct	2392 May 23 11:14	21° $\Upsilon$ 31'25	



evening set	2392 Sep 06 16:39	29° $\overline{\text{M}}$ 27'13		opposition	2398 May 29 17:18	8° $\overline{\text{A}}$ 26'17	2°04'11
	2392 Sep 11 03:24	0° $\overline{\text{A}}$		min. Earth dist.	2398 May 29 18:43	8° $\overline{\text{A}}$ 26'02	8.98015 AU
				direct	2398 Aug 08 21:01	5° $\overline{\text{A}}$ 05'22	
conjunction	2392 Sep 24 05:35	1° $\overline{\text{A}}$ 37'47	2°01'13	evening set	2398 Nov 19 21:34	12° $\overline{\text{A}}$ 16'42	
minimum elong	2392 Sep 24 05:32	1° $\overline{\text{A}}$ 37'46	2°01'13				
max. Earth dist.	2392 Sep 24 08:48	1° $\overline{\text{A}}$ 38'47	10.43562 AU	conjunction	2398 Dec 06 15:03	14° $\overline{\text{A}}$ 14'42	1°32'03
morning rise	2392 Oct 11 14:09	3° $\overline{\text{A}}$ 46'59		minimum elong	2398 Dec 06 15:05	14° $\overline{\text{A}}$ 14'42	1°32'03
retrograde	2393 Jan 20 04:19	11° $\overline{\text{A}}$ 18'55		max. Earth dist.	2398 Dec 06 12:38	14° $\overline{\text{A}}$ 13'59	11.00663 AU
opposition	2393 Mar 28 13:24	7° $\overline{\text{A}}$ 57'08	2°36'46	morning rise	2398 Dec 23 06:01	16° $\overline{\text{A}}$ 12'00	
min. Earth dist.	2393 Mar 28 10:16	7° $\overline{\text{A}}$ 57'45	8.49395 AU	retrograde	2399 Apr 02 01:11	23° $\overline{\text{A}}$ 11'12	
direct	2393 Jun 06 06:10	4° $\overline{\text{A}}$ 30'10		opposition	2399 Jun 10 21:46	19° $\overline{\text{A}}$ 54'07	1°40'02
evening set	2393 Sep 20 04:51	12° $\overline{\text{A}}$ 18'26		min. Earth dist.	2399 Jun 10 23:53	19° $\overline{\text{A}}$ 53'44	9.02915 AU
				direct	2399 Aug 21 02:30	16° $\overline{\text{A}}$ 34'09	
conjunction	2393 Oct 07 13:14	14° $\overline{\text{A}}$ 26'09	2°11'09	evening set	2399 Dec 01 09:49	23° $\overline{\text{A}}$ 40'40	
minimum elong	2393 Oct 07 13:12	14° $\overline{\text{A}}$ 26'08	2°11'09				
max. Earth dist.	2393 Oct 07 16:05	14° $\overline{\text{A}}$ 27'01	10.55060 AU	conjunction	2399 Dec 18 02:12	25° $\overline{\text{A}}$ 37'57	1°10'45
morning rise	2393 Oct 24 17:01	16° $\overline{\text{A}}$ 32'28		minimum elong	2399 Dec 18 02:14	25° $\overline{\text{A}}$ 37'57	1°10'45
retrograde	2394 Feb 01 20:31	23° $\overline{\text{A}}$ 56'24		max. Earth dist.	2399 Dec 17 22:52	25° $\overline{\text{A}}$ 36'58	11.04478 AU
opposition	2394 Apr 10 14:01	20° $\overline{\text{A}}$ 35'55	2°44'41	morning rise	2400 Jan 03 16:45	27° $\overline{\text{A}}$ 34'45	
min. Earth dist.	2394 Apr 10 11:12	20° $\overline{\text{A}}$ 36'28	8.60909 AU		2400 Jan 25 14:55	0° $\overline{\text{B}}$	
direct	2394 Jun 19 17:37	17° $\overline{\text{A}}$ 10'11		retrograde	2400 Apr 12 20:41	4° $\overline{\text{B}}$ 33'17	
evening set	2394 Oct 03 06:44	24° $\overline{\text{A}}$ 50'25		opposition	2400 Jun 22 00:46	1° $\overline{\text{B}}$ 16'08	1°12'10
				min. Earth dist.	2400 Jun 22 04:20	1° $\overline{\text{B}}$ 15'28	9.05576 AU
conjunction	2394 Oct 20 10:53	26° $\overline{\text{A}}$ 55'29	2°14'37		2400 Jul 09 16:49	30° $\overline{\text{R}}$ $\overline{\text{A}}$	
minimum elong	2394 Oct 20 10:53	26° $\overline{\text{A}}$ 55'29	2°14'36	direct	2400 Sep 01 02:16	27° $\overline{\text{A}}$ 56'53	
max. Earth dist.	2394 Oct 20 13:28	26° $\overline{\text{A}}$ 56'17	10.66420 AU		2400 Oct 22 12:11	0° $\overline{\text{B}}$	
morning rise	2394 Nov 06 10:25	28° $\overline{\text{A}}$ 59'12		evening set	2400 Dec 11 19:25	4° $\overline{\text{B}}$ 59'57	
	2394 Nov 15 00:29	0° $\overline{\text{M}}$					
retrograde	2395 Feb 14 06:30	6° $\overline{\text{M}}$ 15'49		conjunction	2400 Dec 28 11:00	6° $\overline{\text{B}}$ 56'53	0°46'47
opposition	2395 Apr 23 09:28	2° $\overline{\text{M}}$ 56'30	2°44'43	minimum elong	2400 Dec 28 11:01	6° $\overline{\text{B}}$ 56'53	0°46'47
min. Earth dist.	2395 Apr 23 07:40	2° $\overline{\text{M}}$ 56'51	8.72010 AU	max. Earth dist.	2400 Dec 28 05:54	6° $\overline{\text{B}}$ 55'23	11.06032 AU
	2395 Jun 08 23:04	30° $\overline{\text{R}}$ $\overline{\text{A}}$		morning rise	2401 Jan 14 01:47	8° $\overline{\text{B}}$ 53'35	
direct	2395 Jul 02 20:45	29° $\overline{\text{A}}$ 32'04		retrograde	2401 Apr 24 14:37	15° $\overline{\text{B}}$ 53'00	
	2395 Jul 26 17:18	0° $\overline{\text{M}}$		opposition	2401 Jul 04 03:07	12° $\overline{\text{B}}$ 35'28	0°41'38
evening set	2395 Oct 15 22:42	7° $\overline{\text{M}}$ 04'13		min. Earth dist.	2401 Jul 04 07:45	12° $\overline{\text{B}}$ 34'36	9.05971 AU
				direct	2401 Sep 13 00:30	9° $\overline{\text{B}}$ 16'40	
conjunction	2395 Nov 01 23:09	9° $\overline{\text{M}}$ 06'56	2°11'51	evening set	2401 Dec 23 03:43	16° $\overline{\text{B}}$ 17'43	
minimum elong	2395 Nov 01 23:10	9° $\overline{\text{M}}$ 06'56	2°11'50				
max. Earth dist.	2395 Nov 02 00:40	9° $\overline{\text{M}}$ 07'23	10.77121 AU	conjunction	2402 Jan 08 19:01	18° $\overline{\text{B}}$ 14'39	0°21'02
morning rise	2395 Nov 18 19:19	11° $\overline{\text{M}}$ 08'24		minimum elong	2402 Jan 08 19:02	18° $\overline{\text{B}}$ 14'39	0°21'02
	2395 Dec 24 07:14	15° $\overline{\text{M}}$		max. Earth dist.	2402 Jan 08 13:18	18° $\overline{\text{B}}$ 12'58	11.05324 AU
retrograde	2396 Feb 26 09:32	18° $\overline{\text{M}}$ 18'42		morning rise	2402 Jan 25 10:22	20° $\overline{\text{B}}$ 11'36	
opposition	2396 May 05 00:09	15° $\overline{\text{M}}$ 00'20	2°37'27	retrograde	2402 May 06 12:58	27° $\overline{\text{B}}$ 13'28	
min. Earth dist.	2396 May 04 23:55	15° $\overline{\text{M}}$ 00'23	8.82201 AU	opposition	2402 Jul 16 06:02	23° $\overline{\text{B}}$ 55'13	0°09'26
	2396 May 05 01:54	15° $\overline{\text{R}}$ $\overline{\text{M}}$		min. Earth dist.	2402 Jul 16 10:37	23° $\overline{\text{B}}$ 54'23	9.04128 AU
direct	2396 Jul 14 19:17	11° $\overline{\text{M}}$ 37'09		direct	2402 Sep 24 22:39	20° $\overline{\text{B}}$ 36'41	
	2396 Sep 19 16:43	15° $\overline{\text{M}}$		desc. node	2402 Nov 01 21:55	21° $\overline{\text{B}}$ 46'27	
evening set	2396 Oct 27 05:34	19° $\overline{\text{M}}$ 01'34		evening set	2403 Jan 03 12:12	27° $\overline{\text{B}}$ 37'04	
conjunction	2396 Nov 13 02:57	21° $\overline{\text{M}}$ 02'16	2°03'22	conjunction	2403 Jan 20 03:42	29° $\overline{\text{B}}$ 34'22	0°-5'-41
minimum elong	2396 Nov 13 02:59	21° $\overline{\text{M}}$ 02'17	2°03'22	minimum elong	2403 Jan 20 03:41	29° $\overline{\text{B}}$ 34'22	0°05'42
max. Earth dist.	2396 Nov 13 02:27	21° $\overline{\text{M}}$ 02'07	10.86684 AU	behind sun begin	2403 Jan 19 20:59	29° $\overline{\text{B}}$ 32'24	
morning rise	2396 Nov 29 20:45	23° $\overline{\text{M}}$ 01'56		behind sun end	2403 Jan 20 10:22	29° $\overline{\text{B}}$ 36'19	
	2397 Feb 25 15:23	0° $\overline{\text{A}}$		max. Earth dist.	2403 Jan 19 22:41	29° $\overline{\text{B}}$ 32'55	11.02400 AU
retrograde	2397 Mar 09 09:12	0° $\overline{\text{A}}$ 07'05			2403 Jan 23 18:18	0° $\approx$	
	2397 Mar 21 04:28	30° $\overline{\text{R}}$ $\overline{\text{M}}$		morning rise	2403 Feb 05 19:47	1° $\approx$ 31'54	
opposition	2397 May 17 10:30	26° $\overline{\text{M}}$ 49'24	2°23'38	retrograde	2403 May 18 14:14	8° $\approx$ 37'43	
min. Earth dist.	2397 May 17 11:20	26° $\overline{\text{M}}$ 49'15	8.91010 AU	opposition	2403 Jul 28 10:18	5° $\approx$ 18'31	0°-23'-19
direct	2397 Jul 27 11:28	23° $\overline{\text{M}}$ 27'24		min. Earth dist.	2403 Jul 28 14:21	5° $\approx$ 17'46	9.00131 AU
	2397 Nov 01 17:22	0° $\overline{\text{A}}$		direct	2403 Oct 06 18:26	2° $\approx$ 00'01	
evening set	2397 Nov 08 04:42	0° $\overline{\text{A}}$ 44'45		evening set	2404 Jan 14 22:54	9° $\approx$ 01'14	
conjunction	2397 Nov 24 23:46	2° $\overline{\text{A}}$ 43'54	1°49'52	conjunction	2404 Jan 31 14:45	10° $\approx$ 59'14	0°-32'-16
minimum elong	2397 Nov 24 23:48	2° $\overline{\text{A}}$ 43'54	1°49'52	minimum elong	2404 Jan 31 14:44	10° $\approx$ 59'13	0°32'16
max. Earth dist.	2397 Nov 24 21:55	2° $\overline{\text{A}}$ 43'21	10.94657 AU	max. Earth dist.	2404 Jan 31 09:36	10° $\approx$ 57'42	10.97376 AU
morning rise	2397 Dec 11 15:51	4° $\overline{\text{A}}$ 42'10		morning rise	2404 Feb 17 08:02	12° $\approx$ 57'42	
retrograde	2398 Mar 21 05:02	11° $\overline{\text{A}}$ 43'33			2404 Mar 06 11:16	15° $\approx$	



retrograde	2404 May 29 20:22	20° <del>30</del> 08'50		retrograde	2410 Aug 15 22:30	4° <del>8</del> 13'31	
opposition	2404 Aug 08 16:46	16° <del>30</del> 48'32	0°-55'-31	opposition	2410 Oct 24 04:48	0° <del>8</del> 45'30	-2°-46'-1
min. Earth dist.	2404 Aug 08 21:04	16° <del>30</del> 47'44	8.94133 AU	min. Earth dist.	2410 Oct 24 05:40	0° <del>8</del> 45'19	8.33296 AU
	2404 Sep 03 09:29	15° <del>30</del> <del>00</del>			2410 Nov 02 19:09	30° <del>30</del> <del>00</del>	
direct	2404 Oct 17 15:12	13° <del>30</del> 29'50		direct	2410 Dec 30 06:54	27° <del>30</del> 22'06	
	2404 Nov 29 11:47	15° <del>30</del>			2411 Feb 23 08:13	0° <del>8</del>	
evening set	2405 Jan 25 13:13	20° <del>30</del> 33'25		evening set	2411 Apr 10 08:05	5° <del>8</del> 04'48	
conjunction	2405 Feb 11 05:41	22° <del>30</del> 32'26	0°-57'-52	conjunction	2411 Apr 27 16:48	7° <del>8</del> 16'35	-2°-12'00
minimum elong	2405 Feb 11 05:39	22° <del>30</del> 32'26	0°57'52	minimum elong	2411 Apr 27 16:50	7° <del>8</del> 16'36	2°12'01
max. Earth dist.	2405 Feb 10 23:51	22° <del>30</del> 30'41	10.90445 AU	max. Earth dist.	2411 Apr 27 16:08	7° <del>8</del> 16'22	10.28017 AU
morning rise	2405 Feb 28 00:34	24° <del>30</del> 32'11		morning rise	2411 May 15 06:13	9° <del>8</del> 29'52	
	2405 Apr 24 01:02	0° <del>30</del>			2411 Jul 04 10:58	15° <del>8</del>	
retrograde	2405 Jun 11 06:41	1° <del>30</del> 49'58		retrograde	2411 Aug 30 03:32	17° <del>8</del> 38'44	
	2405 Jul 30 23:22	30° <del>30</del> <del>00</del>			2411 Oct 27 10:14	15° <del>30</del> <del>00</del>	
opposition	2405 Aug 21 02:39	28° <del>30</del> 28'25	-1°-25'-56	opposition	2411 Nov 06 21:45	14° <del>30</del> 09'53	-2°-39'-16
min. Earth dist.	2405 Aug 21 07:17	28° <del>30</del> 27'33	8.86355 AU	min. Earth dist.	2411 Nov 06 21:34	14° <del>30</del> 09'56	8.23309 AU
direct	2405 Oct 29 13:32	25° <del>30</del> 09'18		direct	2412 Jan 12 15:55	10° <del>30</del> 45'23	
	2406 Jan 17 06:33	0° <del>30</del>			2412 Mar 23 18:22	15° <del>30</del>	
evening set	2406 Feb 06 08:24	2° <del>30</del> 16'43		evening set	2412 Apr 23 07:49	18° <del>30</del> 36'15	
conjunction	2406 Feb 23 02:02	4° <del>30</del> 17'05	-1°-21'-25	conjunction	2412 May 10 21:22	20° <del>30</del> 50'45	-2°-2'-40
minimum elong	2406 Feb 23 02:00	4° <del>30</del> 17'04	1°21'26	minimum elong	2412 May 10 21:25	20° <del>30</del> 50'46	2°02'41
max. Earth dist.	2406 Feb 22 20:32	4° <del>30</del> 15'25	10.81862 AU	max. Earth dist.	2412 May 10 22:41	20° <del>30</del> 51'11	10.18737 AU
morning rise	2406 Mar 11 22:49	6° <del>30</del> 18'25		morning rise	2412 May 28 15:08	23° <del>30</del> 06'38	
retrograde	2406 Jun 23 22:59	13° <del>30</del> 44'04			2412 Aug 03 23:04	0° <del>30</del>	
opposition	2406 Sep 02 16:39	10° <del>30</del> 21'08	-1°-53'-19	retrograde	2412 Sep 12 12:43	1° <del>30</del> 21'18	
min. Earth dist.	2406 Sep 02 20:49	10° <del>30</del> 20'20	8.77086 AU		2412 Oct 22 11:28	30° <del>30</del> <del>00</del>	
direct	2406 Nov 10 16:47	7° <del>30</del> 01'27		opposition	2412 Nov 19 19:21	27° <del>30</del> 51'55	-2°-23'-23
evening set	2407 Feb 18 10:11	14° <del>30</del> 14'02		min. Earth dist.	2412 Nov 19 17:41	27° <del>30</del> 52'15	8.14863 AU
				direct	2413 Jan 25 09:04	24° <del>30</del> 26'20	
conjunction	2407 Mar 07 05:38	16° <del>30</del> 16'08	-1°-41'-53		2413 Apr 17 23:41	0° <del>30</del>	
minimum elong	2407 Mar 07 05:35	16° <del>30</del> 16'07	1°41'54	evening set	2413 May 07 16:44	2° <del>30</del> 24'41	
max. Earth dist.	2407 Mar 07 01:29	16° <del>30</del> 14'52	10.71944 AU				
morning rise	2407 Mar 24 04:37	18° <del>30</del> 19'21		conjunction	2413 May 25 11:09	4° <del>30</del> 24'43	-1°-46'-10
retrograde	2407 Jul 07 00:15	25° <del>30</del> 53'42		minimum elong	2413 May 25 11:12	4° <del>30</del> 24'44	1°46'11
opposition	2407 Sep 15 11:15	22° <del>30</del> 29'21	-2°-16'-19	max. Earth dist.	2413 May 25 14:30	4° <del>30</del> 24'48	10.11291 AU
min. Earth dist.	2407 Sep 15 14:13	22° <del>30</del> 28'47	8.66679 AU	morning rise	2413 Jun 12 09:02	6° <del>30</del> 25'54	
direct	2407 Nov 22 23:45	19° <del>30</del> 08'57		retrograde	2413 Sep 27 01:40	15° <del>30</del> 21'8'07	
evening set	2408 Mar 01 19:47	26° <del>30</del> 27'55		opposition	2413 Dec 03 20:43	11° <del>30</del> 24'8'32	-1°-58'-49
				min. Earth dist.	2413 Dec 03 17:31	11° <del>30</del> 24'9'12	8.08492 AU
conjunction	2408 Mar 18 17:34	28° <del>30</del> 32'03	-1°-58'-9	direct	2414 Feb 08 07:50	8° <del>30</del> 21'57	
minimum elong	2408 Mar 18 17:32	28° <del>30</del> 32'02	1°58'11	evening set	2414 May 22 09:31	16° <del>30</del> 26'38	
max. Earth dist.	2408 Mar 18 14:22	28° <del>30</del> 31'03	10.61091 AU				
	2408 Mar 30 15:51	0° <del>30</del>		conjunction	2414 Jun 09 08:19	18° <del>30</del> 24'54	-1°-23'-11
morning rise	2408 Apr 04 19:19	0° <del>30</del> 37'28		minimum elong	2414 Jun 09 08:23	18° <del>30</del> 24'54	1°23'11
retrograde	2408 Jul 19 08:48	8° <del>30</del> 20'59		max. Earth dist.	2414 Jun 09 13:03	18° <del>30</del> 24'7'16	10.06150 AU
opposition	2408 Sep 27 11:20	4° <del>30</del> 55'17	-2°-33'-36	morning rise	2414 Jun 27 09:42	21° <del>30</del> 25'41	
min. Earth dist.	2408 Sep 27 13:15	4° <del>30</del> 54'55	8.55560 AU	retrograde	2414 Oct 11 16:23	29° <del>30</del> 24'55	
direct	2408 Dec 04 10:35	1° <del>30</del> 34'00		opposition	2414 Dec 18 00:34	25° <del>30</del> 25'52'8	-1°-26'-47
evening set	2409 Mar 14 14:11	9° <del>30</del> 00'21		min. Earth dist.	2414 Dec 17 20:30	25° <del>30</del> 25'6'18	8.04599 AU
				direct	2415 Feb 22 11:38	22° <del>30</del> 27'57	
conjunction	2409 Mar 31 14:50	11° <del>30</del> 06'48	-2°-9'-12		2415 Jun 01 10:07	0° <del>30</del>	
minimum elong	2409 Mar 31 14:48	11° <del>30</del> 06'47	2°09'13	evening set	2415 Jun 06 08:20	0° <del>30</del> 37'26	
max. Earth dist.	2409 Mar 31 12:00	11° <del>30</del> 05'55	10.49778 AU				
morning rise	2409 Apr 17 19:57	13° <del>30</del> 07'14'40		conjunction	2415 Jun 24 10:27	2° <del>30</del> 57'54	0°-55'00
retrograde	2409 Aug 01 23:58	21° <del>30</del> 07'25		minimum elong	2415 Jun 24 10:30	2° <del>30</del> 57'54	0°55'00
opposition	2409 Oct 10 17:13	17° <del>30</del> 40'28	-2°-43'-52	max. Earth dist.	2415 Jun 24 15:48	2° <del>30</del> 59'38	10.03630 AU
min. Earth dist.	2409 Oct 10 18:31	17° <del>30</del> 40'12	8.44241 AU	morning rise	2415 Jul 12 14:05	5° <del>30</del> 18'51	
direct	2409 Dec 17 05:17	14° <del>30</del> 18'10		retrograde	2415 Oct 26 06:26	13° <del>30</del> 36'28	
evening set	2410 Mar 27 18:11	21° <del>30</del> 52'33		opposition	2416 Jan 01 05:17	10° <del>30</del> 07'30	0°-49'-15
				min. Earth dist.	2416 Jan 01 01:01	10° <del>30</del> 08'23	8.03423 AU
conjunction	2410 Apr 13 22:29	24° <del>30</del> 01'35	-2°-14'-3	direct	2416 Mar 07 19:59	6° <del>30</del> 39'11	
minimum elong	2410 Apr 13 22:29	24° <del>30</del> 01'35	2°14'04	evening set	2416 Jun 20 10:28	14° <del>30</del> 51'37	
max. Earth dist.	2410 Apr 13 20:17	24° <del>30</del> 00'54	10.38559 AU				
morning rise	2410 May 01 07:35	26° <del>30</del> 12'08		conjunction	2416 Jul 08 14:27	17° <del>30</del> 12'34	0°-23'-24
	2410 Jun 03 07:32	0° <del>30</del>		minimum elong	2416 Jul 08 14:28	17° <del>30</del> 12'34	0°23'24



max. Earth dist.	2416 Jul 08 19:53	17° $\overline{5}$ 14'19	10.03865 AU	conjunction	2422 Oct 02 04:43	9° $\overline{5}$ 09'59	2°07'36
morning rise	2416 Jul 26 18:47	19° $\overline{5}$ 33'36		minimum elong	2422 Oct 02 04:41	9° $\overline{5}$ 09'58	2°07'35
retrograde	2416 Nov 08 16:58	27° $\overline{5}$ 47'16		max. Earth dist.	2422 Oct 02 07:17	9° $\overline{5}$ 10'47	10.49472 AU
opposition	2417 Jan 14 09:29	24° $\overline{5}$ 19'02	0°-8'-43	morning rise	2422 Oct 19 10:31	11° $\overline{5}$ 17'39	
min. Earth dist.	2417 Jan 14 05:22	24° $\overline{5}$ 19'53	8.04992 AU	retrograde	2423 Jan 27 19:30	18° $\overline{5}$ 45'27	
direct	2417 Mar 22 08:21	20° $\overline{5}$ 50'08		opposition	2423 Apr 05 08:10	15° $\overline{5}$ 24'23	2°42'13
asc. node	2417 Apr 04 21:20	21° $\overline{5}$ 00'22		min. Earth dist.	2423 Apr 05 06:45	15° $\overline{5}$ 24'39	8.55167 AU
evening set	2417 Jul 05 12:56	29° $\overline{5}$ 03'29		direct	2423 Jun 14 05:58	11° $\overline{5}$ 57'58	
	2417 Jul 12 21:37	0° $\overline{5}$		evening set	2423 Sep 28 01:02	19° $\overline{5}$ 42'11	
conjunction	2417 Jul 23 17:09	1° $\overline{5}$ 24'00	0°09'34	conjunction	2423 Oct 15 06:57	21° $\overline{5}$ 48'30	2°13'53
minimum elong	2417 Jul 23 17:08	1° $\overline{5}$ 24'00	0°09'34	minimum elong	2423 Oct 15 06:56	21° $\overline{5}$ 48'29	2°13'53
behind sun begin	2417 Jul 23 11:06	1° $\overline{5}$ 22'03		max. Earth dist.	2423 Oct 15 08:01	21° $\overline{5}$ 48'49	10.60596 AU
behind sun end	2417 Jul 23 23:11	1° $\overline{5}$ 25'56		morning rise	2423 Nov 01 08:26	23° $\overline{5}$ 53'27	
max. Earth dist.	2417 Jul 23 22:05	1° $\overline{5}$ 25'35	10.06746 AU		2424 Jan 02 17:21	0° $\overline{5}$	
morning rise	2417 Aug 10 20:30	3° $\overline{5}$ 44'12		retrograde	2424 Feb 09 06:56	1° $\overline{5}$ 13'35	
retrograde	2417 Nov 22 21:09	11° $\overline{5}$ 52'06			2424 Mar 18 16:54	30° $\overline{5}$ $\overline{R}$ $\overline{5}$	
opposition	2418 Jan 28 11:35	8° $\overline{5}$ 24'50	0°32'02	opposition	2424 Apr 17 06:12	27° $\overline{5}$ 53'32	2°45'41
min. Earth dist.	2418 Jan 28 07:52	8° $\overline{5}$ 25'36	8.09083 AU	min. Earth dist.	2424 Apr 17 05:13	27° $\overline{5}$ 53'43	8.66180 AU
direct	2418 Apr 05 20:59	4° $\overline{5}$ 55'40		direct	2424 Jun 26 14:23	24° $\overline{5}$ 28'11	
evening set	2418 Jul 20 13:20	13° $\overline{5}$ 08'05			2424 Sep 21 22:10	0° $\overline{5}$	
	2418 Aug 04 03:23	15° $\overline{5}$		evening set	2424 Oct 09 21:30	2° $\overline{5}$ 04'16	
conjunction	2418 Aug 07 16:05	15° $\overline{5}$ 27'19	0°41'36	conjunction	2424 Oct 26 23:31	4° $\overline{5}$ 08'06	2°13'47
minimum elong	2418 Aug 07 16:03	15° $\overline{5}$ 27'18	0°41'37	minimum elong	2424 Oct 26 23:31	4° $\overline{5}$ 08'06	2°13'47
max. Earth dist.	2418 Aug 07 20:18	15° $\overline{5}$ 28'41	10.11973 AU	max. Earth dist.	2424 Oct 26 23:53	4° $\overline{5}$ 08'13	10.71343 AU
morning rise	2418 Aug 25 16:47	17° $\overline{5}$ 45'52		morning rise	2424 Nov 12 21:21	6° $\overline{5}$ 10'40	
retrograde	2418 Dec 06 19:54	25° $\overline{5}$ 46'44		retrograde	2425 Feb 20 12:22	13° $\overline{5}$ 23'59	
opposition	2419 Feb 11 10:27	22° $\overline{5}$ 20'40	1°10'23	opposition	2425 Apr 29 22:52	10° $\overline{5}$ 04'47	2°41'31
min. Earth dist.	2419 Feb 11 06:43	22° $\overline{5}$ 21'25	8.15384 AU	min. Earth dist.	2425 Apr 29 22:03	10° $\overline{5}$ 04'57	8.76548 AU
direct	2419 Apr 20 07:31	18° $\overline{5}$ 51'33		direct	2425 Jul 09 16:46	6° $\overline{5}$ 40'34	
evening set	2419 Aug 04 08:54	27° $\overline{5}$ 01'16		evening set	2425 Oct 22 08:23	14° $\overline{5}$ 08'43	
					2425 Oct 29 13:03	15° $\overline{5}$	
conjunction	2419 Aug 22 08:45	29° $\overline{5}$ 18'31	1°10'51	conjunction	2425 Nov 08 07:14	16° $\overline{5}$ 10'24	2°07'44
minimum elong	2419 Aug 22 08:42	29° $\overline{5}$ 18'30	1°10'51	minimum elong	2425 Nov 08 07:15	16° $\overline{5}$ 10'25	2°07'44
max. Earth dist.	2419 Aug 22 12:51	29° $\overline{5}$ 19'50	10.19252 AU	max. Earth dist.	2425 Nov 08 07:28	16° $\overline{5}$ 10'29	10.81223 AU
	2419 Aug 27 18:23	0° $\overline{5}$ $\overline{R}$		morning rise	2425 Nov 25 02:04	18° $\overline{5}$ 10'57	
morning rise	2419 Sep 09 05:25	1° $\overline{5}$ 34'45		retrograde	2426 Mar 04 14:49	25° $\overline{5}$ 18'34	
retrograde	2419 Dec 20 13:06	9° $\overline{5}$ 27'47		opposition	2426 May 12 11:09	22° $\overline{5}$ 00'04	2°30'27
opposition	2420 Feb 25 05:28	6° $\overline{5}$ 02'58	1°44'01	min. Earth dist.	2426 May 12 10:56	22° $\overline{5}$ 00'06	8.85823 AU
min. Earth dist.	2420 Feb 25 01:36	6° $\overline{5}$ 03'45	8.23595 AU	direct	2426 Jul 22 10:47	18° $\overline{5}$ 37'00	
direct	2420 May 03 14:10	2° $\overline{5}$ 34'13		evening set	2426 Nov 03 10:48	25° $\overline{5}$ 57'42	
evening set	2420 Aug 17 21:10	10° $\overline{5}$ 39'24					
conjunction	2420 Sep 04 17:03	12° $\overline{5}$ 54'10	1°35'38	conjunction	2426 Nov 20 07:01	27° $\overline{5}$ 57'38	1°56'19
minimum elong	2420 Sep 04 17:00	12° $\overline{5}$ 54'09	1°35'38	minimum elong	2426 Nov 20 07:03	27° $\overline{5}$ 57'39	1°56'19
max. Earth dist.	2420 Sep 04 21:13	12° $\overline{5}$ 55'30	10.28249 AU	max. Earth dist.	2426 Nov 20 06:43	27° $\overline{5}$ 57'33	10.89826 AU
morning rise	2420 Sep 22 08:52	15° $\overline{5}$ 07'41		morning rise	2426 Dec 06 23:43	29° $\overline{5}$ 56'35	
retrograde	2421 Jan 01 23:36	22° $\overline{5}$ 52'19			2426 Dec 07 11:24	0° $\overline{5}$ $\overline{R}$	
opposition	2421 Mar 09 19:44	19° $\overline{5}$ 28'47	2°11'10	retrograde	2427 Mar 16 12:19	6° $\overline{5}$ $\overline{R}$ 59'46	
min. Earth dist.	2421 Mar 09 16:11	19° $\overline{5}$ 29'30	8.33315 AU	opposition	2427 May 24 19:38	3° $\overline{5}$ $\overline{R}$ 41'47	2°13'19
direct	2421 May 17 16:48	16° $\overline{5}$ 00'38		min. Earth dist.	2427 May 24 20:41	3° $\overline{5}$ $\overline{R}$ 41'36	8.93648 AU
evening set	2421 Sep 01 00:44	23° $\overline{5}$ 59'50		direct	2427 Aug 03 21:55	0° $\overline{5}$ $\overline{R}$ 19'50	
				evening set	2427 Nov 15 06:17	7° $\overline{5}$ $\overline{R}$ 33'58	
conjunction	2421 Sep 18 16:00	26° $\overline{5}$ 11'47	1°54'46	conjunction	2427 Dec 02 00:26	9° $\overline{5}$ $\overline{R}$ 32'32	1°40'16
minimum elong	2421 Sep 18 15:57	26° $\overline{5}$ 11'47	1°54'46	minimum elong	2427 Dec 02 00:29	9° $\overline{5}$ $\overline{R}$ 32'33	1°40'17
max. Earth dist.	2421 Sep 18 19:45	26° $\overline{5}$ 12'58	10.38504 AU	max. Earth dist.	2427 Dec 01 22:35	9° $\overline{5}$ $\overline{R}$ 31'59	10.96836 AU
morning rise	2421 Oct 06 02:41	28° $\overline{5}$ 22'22		morning rise	2427 Dec 18 15:56	11° $\overline{5}$ $\overline{R}$ 30'21	
	2421 Oct 19 15:41	0° $\overline{5}$ $\overline{5}$		retrograde	2428 Mar 27 07:05	18° $\overline{5}$ $\overline{R}$ 30'29	
retrograde	2422 Jan 15 01:02	5° $\overline{5}$ 58'27		opposition	2428 Jun 05 00:54	15° $\overline{5}$ $\overline{R}$ 12'50	1°51'04
opposition	2422 Mar 23 04:37	2° $\overline{5}$ 36'12	2°30'44	min. Earth dist.	2428 Jun 05 02:56	15° $\overline{5}$ $\overline{R}$ 12'27	8.99735 AU
min. Earth dist.	2422 Mar 23 02:08	2° $\overline{5}$ 36'41	8.44026 AU	direct	2428 Aug 15 05:45	11° $\overline{5}$ $\overline{R}$ 51'54	
	2422 Apr 29 14:36	30° $\overline{5}$ $\overline{R}$ $\overline{R}$		evening set	2428 Nov 25 20:16	19° $\overline{5}$ $\overline{R}$ 00'33	
direct	2422 May 31 14:36	29° $\overline{5}$ 08'49					
	2422 Jul 02 10:58	0° $\overline{5}$ $\overline{5}$		conjunction	2428 Dec 12 13:03	20° $\overline{5}$ $\overline{R}$ 58'10	1°20'23
evening set	2422 Sep 14 18:16	7° $\overline{5}$ 00'55		minimum elong	2428 Dec 12 13:05	20° $\overline{5}$ $\overline{R}$ 58'11	1°20'24



max. Earth dist.	2428 Dec 12 10:08	20°♂57'19	11.01988 AU	conjunction	2435 Feb 18 04:39	29°♂18'29	-1°-11'-12
morning rise	2428 Dec 29 03:58	22°♂55'14		minimum elong	2435 Feb 18 04:37	29°♂18'28	1°11'13
retrograde	2429 Apr 08 01:19	29°♂53'50		max. Earth dist.	2435 Feb 18 01:17	29°♂17'28	10.88551 AU
opposition	2429 Jun 17 04:02	26°♂36'17	1°24'42		2435 Feb 23 23:06	0°♂	
min. Earth dist.	2429 Jun 17 06:07	26°♂35'54	9.03848 AU	morning rise	2435 Mar 07 00:15	1°♂18'44	
direct	2429 Aug 27 08:13	23°♂16'17		retrograde	2435 Jun 18 16:38	8°♂39'35	
	2429 Dec 04 06:20	0°♂		opposition	2435 Aug 28 11:01	5°♂17'58	-1°-41'-25
evening set	2429 Dec 07 06:25	0°♂20'41		min. Earth dist.	2435 Aug 28 13:34	5°♂17'29	8.84320 AU
				direct	2435 Nov 05 16:08	1°♂59'20	
conjunction	2429 Dec 23 22:25	2°♂17'43	0°57'30	evening set	2436 Feb 13 09:49	9°♂08'14	
minimum elong	2429 Dec 23 22:26	2°♂17'44	0°57'29				
max. Earth dist.	2429 Dec 23 19:48	2°♂16'57	11.05078 AU	conjunction	2436 Mar 01 04:08	11°♂09'08	-1°-33'-6
morning rise	2430 Jan 09 13:03	4°♂14'26		minimum elong	2436 Mar 01 04:06	11°♂09'07	1°33'07
retrograde	2430 Apr 19 20:20	11°♂13'04		max. Earth dist.	2436 Feb 29 23:56	11°♂07'52	10.79661 AU
opposition	2430 Jun 29 06:08	7°♂55'22	0°55'13	morning rise	2436 Mar 18 01:52	13°♂11'05	
min. Earth dist.	2430 Jun 29 08:10	7°♂54'59	9.05834 AU	retrograde	2436 Jun 30 13:19	20°♂39'58	
direct	2430 Sep 08 07:10	4°♂36'09		opposition	2436 Sep 09 02:35	17°♂17'06	-2°-6'-24
evening set	2430 Dec 18 14:37	11°♂37'39		min. Earth dist.	2436 Sep 09 05:44	17°♂16'30	8.74769 AU
				direct	2436 Nov 16 19:43	13°♂57'49	
conjunction	2431 Jan 04 06:08	13°♂34'29	0°32'26	evening set	2437 Feb 24 14:57	21°♂12'22	
minimum elong	2431 Jan 04 06:09	13°♂34'30	0°32'26				
max. Earth dist.	2431 Jan 04 03:12	13°♂33'38	11.06000 AU	conjunction	2437 Mar 13 11:12	23°♂15'05	-1°-51'-18
morning rise	2431 Jan 20 21:02	15°♂31'13		minimum elong	2437 Mar 13 11:10	23°♂15'04	1°51'19
retrograde	2431 May 01 17:46	22°♂31'23		max. Earth dist.	2437 Mar 13 06:55	23°♂13'46	10.69478 AU
opposition	2431 Jul 11 08:14	19°♂13'22	0°23'39	morning rise	2437 Mar 30 11:31	25°♂19'03	
min. Earth dist.	2431 Jul 11 10:59	19°♂12'51	9.05642 AU		2437 May 13 03:48	0°♀	
direct	2431 Sep 20 03:07	15°♂54'43		retrograde	2437 Jul 13 15:57	2°♀56'43	
evening set	2431 Dec 29 22:25	22°♂54'44			2437 Sep 15 23:37	30°♀♂	
				opposition	2437 Sep 21 23:17	29°♂32'29	-2°-26'-18
conjunction	2432 Jan 15 13:41	24°♂51'43	0°06'09	min. Earth dist.	2437 Sep 22 02:29	29°♂31'52	8.64093 AU
minimum elong	2432 Jan 15 13:42	24°♂51'43	0°06'09	direct	2437 Nov 29 04:05	26°♂12'23	
behind sun begin	2432 Jan 15 07:04	24°♂49'47			2438 Feb 05 12:33	0°♀	
behind sun end	2432 Jan 15 20:19	24°♂53'39		evening set	2438 Mar 09 04:04	3°♀33'44	
max. Earth dist.	2432 Jan 15 09:36	24°♂50'33	11.04730 AU				
morning rise	2432 Feb 01 05:25	26°♂48'51		conjunction	2438 Mar 26 03:05	5°♀38'37	-2°-4'-46
	2432 Mar 01 17:17	0°♂		minimum elong	2438 Mar 26 03:03	5°♀38'37	2°04'47
desc. node	2432 Apr 10 11:11	3°♂02'06		max. Earth dist.	2438 Mar 25 23:36	5°♀37'33	10.58360 AU
retrograde	2432 May 12 15:18	3°♂52'05		morning rise	2438 Apr 12 06:24	7°♀44'53	
opposition	2432 Jul 22 11:14	0°♂33'28	0°-8'-55	retrograde	2438 Jul 27 02:04	15°♀31'46	
min. Earth dist.	2432 Jul 22 14:53	0°♂32'48	9.03276 AU	opposition	2438 Oct 05 01:26	12°♀06'10	-2°-39'-50
	2432 Jul 30 01:26	30°♀♂		min. Earth dist.	2438 Oct 05 03:56	12°♀05'41	8.52714 AU
direct	2432 Sep 30 22:19	27°♂15'10		direct	2438 Dec 11 20:10	8°♀45'05	
	2432 Nov 29 08:09	0°♂		evening set	2439 Mar 22 02:33	16°♀14'09	
evening set	2433 Jan 09 07:30	4°♂15'16					
				conjunction	2439 Apr 08 05:00	18°♀21'32	-2°-12'-30
conjunction	2433 Jan 25 22:57	6°♂12'42	0°-20'-36	minimum elong	2439 Apr 08 05:00	18°♀21'32	2°12'31
minimum elong	2433 Jan 25 22:56	6°♂12'42	0°20'37	max. Earth dist.	2439 Apr 08 02:39	18°♀20'48	10.46823 AU
max. Earth dist.	2433 Jan 25 18:30	6°♂11'24	11.01307 AU	morning rise	2439 Apr 25 11:53	20°♀30'22	
morning rise	2433 Feb 11 15:42	8°♂10'33		retrograde	2439 Aug 09 21:03	28°♀26'15	
	2433 May 05 09:00	15°♂		opposition	2439 Oct 18 09:07	24°♀59'22	-2°-45'-48
retrograde	2433 May 24 18:15	15°♂18'21		min. Earth dist.	2439 Oct 18 10:26	24°♀59'07	8.41224 AU
	2433 Jun 13 08:56	15°♀♂		direct	2439 Dec 24 16:51	21°♀37'07	
opposition	2433 Aug 03 16:01	11°♂58'56	0°-41'-25	evening set	2440 Apr 03 10:49	29°♀14'27	
min. Earth dist.	2433 Aug 03 19:29	11°♂58'17	8.98818 AU		2440 Apr 09 13:02	0°♂	
direct	2433 Oct 12 19:40	8°♂40'44					
	2434 Jan 14 16:33	15°♂		conjunction	2440 Apr 20 17:18	1°♂24'32	-2°-13'-42
evening set	2434 Jan 20 19:24	15°♂42'20		minimum elong	2440 Apr 20 17:18	1°♂24'32	2°13'43
				max. Earth dist.	2440 Apr 20 15:33	1°♂23'59	10.35515 AU
conjunction	2434 Feb 06 11:29	17°♂40'37	0°-46'-42	morning rise	2440 May 08 04:17	3°♂36'06	
minimum elong	2434 Feb 06 11:28	17°♂40'37	0°46'42	retrograde	2440 Aug 22 22:56	11°♂40'08	
max. Earth dist.	2434 Feb 06 07:48	17°♂39'32	10.95850 AU	opposition	2440 Oct 30 22:32	8°♂12'09	-2°-43'-17
morning rise	2434 Feb 23 05:27	19°♂39'30		min. Earth dist.	2440 Oct 30 23:03	8°♂12'02	8.30281 AU
retrograde	2434 Jun 06 02:59	26°♂53'14		direct	2441 Jan 05 20:16	4°♂48'37	
opposition	2434 Aug 15 23:41	23°♂32'48	-1°-12'-39	evening set	2441 Apr 17 04:47	12°♂34'16	
min. Earth dist.	2434 Aug 16 02:28	23°♂32'17	8.92427 AU				
direct	2434 Oct 24 16:15	20°♂14'31		conjunction	2441 May 04 15:47	14°♂47'07	-2°-7'-48
evening set	2435 Feb 01 11:38	27°♂19'03		minimum elong	2441 May 04 15:49	14°♂47'08	2°07'49



max. Earth dist.	2441 May 04 14:46	14°♄46'48	10.25094 AU	conjunction	2447 Jul 31 22:40	9°♄00'44	0°26'27
	2441 May 06 08:07	15°♄		minimum elong	2447 Jul 31 22:39	9°♄00'44	0°26'28
morning rise	2441 May 22 07:16	17°♄01'26		max. Earth dist.	2447 Aug 01 04:02	9°♄02'28	10.07960 AU
retrograde	2441 Sep 06 05:20	25°♄12'13		morning rise	2447 Aug 19 00:44	11°♄20'16	
opposition	2441 Nov 13 17:07	21°♄43'20	-2°-31'-45		2447 Sep 18 19:43	15°♄	
min. Earth dist.	2441 Nov 13 17:03	21°♄43'21	8.20525 AU	retrograde	2447 Nov 30 14:36	19°♄25'00	
direct	2442 Jan 19 08:53	18°♄18'28		opposition	2448 Feb 05 04:37	15°♄57'43	0°52'27
evening set	2442 May 01 08:22	26°♄12'05		min. Earth dist.	2448 Feb 05 00:39	15°♄58'32	8.10810 AU
					2448 Feb 17 01:17	15°♄♄	
conjunction	2442 May 19 00:13	28°♄27'38	-1°-54'-41	direct	2448 Apr 12 19:00	12°♄27'59	
minimum elong	2442 May 19 00:16	28°♄27'39	1°54'42		2448 Jun 06 08:48	15°♄	
max. Earth dist.	2442 May 19 00:07	28°♄27'36	10.16174 AU	evening set	2448 Jul 27 16:53	20°♄39'25	
	2442 May 30 23:58	0°♄					
morning rise	2442 Jun 05 20:11	0°♄44'29		conjunction	2448 Aug 14 18:21	22°♄57'51	0°57'16
retrograde	2442 Sep 20 15:00	9°♄00'02		minimum elong	2448 Aug 14 18:18	22°♄57'50	0°57'16
opposition	2442 Nov 27 15:46	5°♄30'35	-2°-11'-17	max. Earth dist.	2448 Aug 14 23:13	22°♄59'25	10.14234 AU
min. Earth dist.	2442 Nov 27 15:12	5°♄30'42	8.12534 AU	morning rise	2448 Sep 01 17:05	25°♄15'23	
direct	2443 Feb 02 04:23	2°♄04'24			2448 Oct 13 08:26	0°♄	
evening set	2443 May 15 20:28	10°♄05'08		retrograde	2448 Dec 13 10:58	3°♄12'35	
					2449 Feb 15 07:33	30°♄♄	
conjunction	2443 Jun 02 17:03	12°♄23'04	-1°-34'-44	opposition	2449 Feb 18 01:32	29°♄46'33	1°28'35
minimum elong	2443 Jun 02 17:07	12°♄23'05	1°34'44	min. Earth dist.	2449 Feb 17 21:59	29°♄47'17	8.18208 AU
max. Earth dist.	2443 Jun 02 18:15	12°♄23'27	10.09280 AU	direct	2449 Apr 27 03:38	26°♄17'02	
morning rise	2443 Jun 20 16:57	14°♄42'02			2449 Jul 03 19:48	0°♄	
retrograde	2443 Oct 05 03:32	23°♄00'03		evening set	2449 Aug 11 08:48	4°♄24'47	
opposition	2443 Dec 11 17:38	19°♄30'22	-1°-42'-44				
min. Earth dist.	2443 Dec 11 16:09	19°♄30'40	8.06788 AU	conjunction	2449 Aug 29 06:42	6°♄40'55	1°24'21
direct	2444 Feb 16 05:48	16°♄03'00		minimum elong	2449 Aug 29 06:38	6°♄40'54	1°24'21
evening set	2444 May 29 15:23	24°♄09'32		max. Earth dist.	2449 Aug 29 10:47	6°♄42'13	10.22598 AU
				morning rise	2449 Sep 16 01:05	8°♄55'55	
conjunction	2444 Jun 16 15:58	26°♄29'16	-1°-8'-55	retrograde	2449 Dec 26 23:14	16°♄44'49	
minimum elong	2444 Jun 16 16:01	26°♄29'17	1°08'55	opposition	2450 Mar 03 18:00	13°♄20'11	1°59'00
max. Earth dist.	2444 Jun 16 18:53	26°♄30'13	10.04827 AU	min. Earth dist.	2450 Mar 03 14:34	13°♄20'53	8.27457 AU
morning rise	2444 Jul 04 18:44	28°♄49'42		direct	2450 May 11 09:54	9°♄51'13	
	2444 Jul 14 02:34	0°♄		evening set	2450 Aug 25 16:43	17°♄53'41	
retrograde	2444 Oct 18 16:35	7°♄07'44					
opposition	2444 Dec 24 21:15	3°♄38'09	-1°-7'-39	conjunction	2450 Sep 12 10:12	20°♄07'05	1°46'17
min. Earth dist.	2444 Dec 24 18:27	3°♄38'44	8.03640 AU	minimum elong	2450 Sep 12 10:08	20°♄07'04	1°46'18
direct	2445 Mar 01 12:02	0°♄09'47		max. Earth dist.	2450 Sep 12 13:48	20°♄08'13	10.32543 AU
evening set	2445 Jun 13 15:12	8°♄20'30		morning rise	2450 Sep 29 23:35	22°♄19'12	
				retrograde	2451 Jan 09 03:44	29°♄59'34	
conjunction	2445 Jul 01 18:35	10°♄41'16	0°-38'-47	opposition	2451 Mar 17 05:22	26°♄36'22	2°22'17
minimum elong	2445 Jul 01 18:37	10°♄41'16	0°38'47	min. Earth dist.	2451 Mar 17 01:49	26°♄37'04	8.38015 AU
max. Earth dist.	2445 Jul 01 22:53	10°♄42'40	10.03091 AU	direct	2451 May 25 10:39	23°♄08'17	
morning rise	2445 Jul 19 22:48	13°♄02'20			2451 Aug 30 18:31	0°♄	
retrograde	2445 Nov 02 04:07	21°♄17'56		evening set	2451 Sep 08 15:01	1°♄04'06	
opposition	2446 Jan 08 01:10	17°♄48'49	0°-28'-18				
min. Earth dist.	2446 Jan 07 21:25	17°♄49'35	8.03286 AU	conjunction	2451 Sep 26 03:50	3°♄14'38	2°02'11
direct	2446 Mar 15 21:44	14°♄19'41		minimum elong	2451 Sep 26 03:47	3°♄14'37	2°02'11
evening set	2446 Jun 28 17:20	22°♄32'40		max. Earth dist.	2451 Sep 26 07:19	3°♄15'44	10.43515 AU
				morning rise	2451 Oct 13 12:07	5°♄23'46	
conjunction	2446 Jul 16 21:51	24°♄53'34	0°-6'-19	retrograde	2452 Jan 22 03:01	12°♄55'45	
minimum elong	2446 Jul 16 21:52	24°♄53'34	0°06'19	opposition	2452 Mar 29 11:28	9°♄33'56	2°37'38
behind sun begin	2446 Jul 16 14:56	24°♄51'21		min. Earth dist.	2452 Mar 29 07:59	9°♄34'37	8.49306 AU
behind sun end	2446 Jul 17 04:49	24°♄55'48		direct	2452 Jun 07 03:52	6°♄06'58	
max. Earth dist.	2446 Jul 17 02:59	24°♄55'12	10.04166 AU	evening set	2452 Sep 21 02:56	13°♄55'14	
morning rise	2446 Aug 04 01:53	27°♄14'20					
	2446 Aug 26 16:28	0°♄		conjunction	2452 Oct 08 11:12	16°♄02'56	2°11'35
asc. node	2446 Sep 27 05:40	3°♄11'25		minimum elong	2452 Oct 08 11:11	16°♄02'56	2°11'35
retrograde	2446 Nov 16 11:46	5°♄25'21		max. Earth dist.	2452 Oct 08 14:41	16°♄04'01	10.54932 AU
opposition	2447 Jan 22 04:05	1°♄57'01	0°12'38	morning rise	2452 Oct 25 14:43	18°♄09'14	
min. Earth dist.	2447 Jan 21 23:55	1°♄57'53	8.05731 AU	retrograde	2453 Feb 02 19:16	25°♄33'15	
	2447 Feb 16 06:29	30°♄♄		opposition	2453 Apr 11 12:13	22°♄12'44	2°44'52
direct	2447 Mar 30 08:31	28°♄27'25		min. Earth dist.	2453 Apr 11 09:44	22°♄13'13	8.60745 AU
	2447 May 11 01:30	0°♄		direct	2453 Jun 20 14:20	18°♄47'00	
evening set	2447 Jul 13 18:51	6°♄40'39		evening set	2453 Oct 04 04:44	26°♄27'16	



conjunction	2453 Oct 21 08:44	28°♄32'20	2°14'29		2459 Sep 25 18:53	0°♄	
minimum elong	2453 Oct 21 08:44	28°♄32'20	2°14'28	evening set	2459 Dec 13 17:36	6°♄38'04	
max. Earth dist.	2453 Oct 21 11:07	28°♄33'04	10.66222 AU				
	2453 Nov 02 08:24	0°♄		conjunction	2459 Dec 30 09:12	8°♄35'00	0°44'18
morning rise	2453 Nov 07 08:10	0°♄36'04		minimum elong	2459 Dec 30 09:13	8°♄35'00	0°44'18
retrograde	2454 Feb 15 03:43	7°♄52'48		max. Earth dist.	2459 Dec 30 04:24	8°♄33'35	11.05970 AU
opposition	2454 Apr 24 07:45	4°♄33'28	2°44'15	morning rise	2460 Jan 16 00:05	10°♄31'44	
min. Earth dist.	2454 Apr 24 06:36	4°♄33'41	8.71785 AU	retrograde	2460 Apr 25 14:18	17°♄31'18	
direct	2454 Jul 03 19:42	1°♄09'00		opposition	2460 Jul 05 02:24	14°♄13'44	0°38'31
evening set	2454 Oct 16 20:42	8°♄41'15		min. Earth dist.	2460 Jul 05 06:20	14°♄13'00	9.05926 AU
				direct	2460 Sep 14 00:40	10°♄55'00	
				evening set	2460 Dec 24 01:57	17°♄55'58	
conjunction	2454 Nov 02 20:57	10°♄43'57	2°11'11				
minimum elong	2454 Nov 02 20:58	10°♄43'58	2°11'10				
max. Earth dist.	2454 Nov 02 21:43	10°♄44'11	10.76870 AU	conjunction	2461 Jan 09 17:24	19°♄52'56	0°18'27
morning rise	2454 Nov 19 17:11	12°♄45'28		minimum elong	2461 Jan 09 17:25	19°♄52'56	0°18'27
	2454 Dec 09 08:46	15°♄		max. Earth dist.	2461 Jan 09 12:44	19°♄51'34	11.05291 AU
retrograde	2455 Feb 27 07:46	19°♄55'57		morning rise	2461 Jan 26 08:43	21°♄49'54	
opposition	2455 May 06 22:39	16°♄37'33	2°36'20	retrograde	2461 May 07 12:15	28°♄51'55	
min. Earth dist.	2455 May 06 22:24	16°♄37'36	8.81932 AU	opposition	2461 Jul 17 05:19	25°♄33'40	0°06'14
	2455 May 29 07:58	15°♄		min. Earth dist.	2461 Jul 17 09:03	25°♄32'59	9.04105 AU
direct	2455 Jul 16 18:03	13°♄14'21		direct	2461 Sep 25 21:00	22°♄15'13	
	2455 Sep 02 00:51	15°♄		desc. node	2461 Sep 27 04:03	22°♄15'18	
evening set	2455 Oct 29 03:28	20°♄38'50		evening set	2462 Jan 04 10:40	29°♄15'34	
					2462 Jan 10 19:09	0°♄	
conjunction	2455 Nov 15 00:47	22°♄39'35	2°02'13	conjunction	2462 Jan 21 02:10	1°♄12'52	0°-8'-16
minimum elong	2455 Nov 15 00:48	22°♄39'36	2°02'13	minimum elong	2462 Jan 21 02:09	1°♄12'52	0°08'17
max. Earth dist.	2455 Nov 15 00:20	22°♄39'27	10.86409 AU	behind sun begin	2462 Jan 20 19:58	1°♄11'04	
morning rise	2455 Dec 01 18:36	24°♄39'17		behind sun end	2462 Jan 21 08:20	1°♄14'41	
	2456 Jan 24 09:53	0°♄		max. Earth dist.	2462 Jan 20 21:31	1°♄11'31	11.02382 AU
retrograde	2456 Mar 10 07:00	1°♄44'40		morning rise	2462 Feb 06 18:16	3°♄10'26	
	2456 Apr 26 20:54	30°♄		retrograde	2462 May 19 14:15	10°♄16'24	
opposition	2456 May 18 09:13	28°♄26'56	2°21'56	opposition	2462 Jul 29 09:45	6°♄57'14	0°-26'-27
min. Earth dist.	2456 May 18 09:10	28°♄26'57	8.90733 AU	min. Earth dist.	2462 Jul 29 13:46	6°♄56'29	9.00125 AU
direct	2456 Jul 28 09:59	25°♄04'58		direct	2462 Oct 07 17:15	3°♄38'48	
	2456 Oct 18 21:09	0°♄		evening set	2463 Jan 15 21:32	10°♄40'00	
evening set	2456 Nov 09 02:37	2°♄22'22					
conjunction	2456 Nov 25 21:47	4°♄21'32	1°48'15	conjunction	2463 Feb 01 13:17	12°♄37'59	0°-34'-46
minimum elong	2456 Nov 25 21:49	4°♄21'33	1°48'15	minimum elong	2463 Feb 01 13:16	12°♄37'59	0°34'46
max. Earth dist.	2456 Nov 25 21:02	4°♄21'19	10.94403 AU	max. Earth dist.	2463 Feb 01 07:41	12°♄36'20	10.97383 AU
morning rise	2456 Dec 12 13:49	6°♄19'51		morning rise	2463 Feb 18 06:43	14°♄36'30	
retrograde	2457 Mar 22 04:48	13°♄21'27			2463 Feb 21 15:55	15°♄	
opposition	2457 May 30 16:10	10°♄04'09	2°01'59	retrograde	2463 May 31 19:22	21°♄47'47	
min. Earth dist.	2457 May 30 16:57	10°♄04'01	8.97784 AU	opposition	2463 Aug 10 16:24	18°♄27'30	0°-58'-28
direct	2457 Aug 09 20:24	6°♄43'15		min. Earth dist.	2463 Aug 10 21:03	18°♄26'38	8.94157 AU
evening set	2457 Nov 20 19:38	13°♄54'34		direct	2463 Oct 19 13:24	15°♄08'51	
				evening set	2464 Jan 27 11:53	22°♄12'26	
conjunction	2457 Dec 07 13:09	15°♄52'36	1°30'04				
minimum elong	2457 Dec 07 13:12	15°♄52'37	1°30'05	conjunction	2464 Feb 13 04:24	24°♄11'27	-1°00'-10
max. Earth dist.	2457 Dec 07 11:24	15°♄52'05	11.00475 AU	minimum elong	2464 Feb 13 04:22	24°♄11'26	1°00'10
morning rise	2457 Dec 24 04:08	17°♄49'57		max. Earth dist.	2464 Feb 12 22:46	24°♄09'46	10.90483 AU
retrograde	2458 Apr 03 00:11	24°♄49'15		morning rise	2464 Feb 29 23:24	26°♄11'12	
opposition	2458 Jun 11 20:52	21°♄32'10	1°37'25		2464 Apr 05 09:11	0°♄	
min. Earth dist.	2458 Jun 11 23:11	21°♄31'44	9.02762 AU	retrograde	2464 Jun 12 05:20	3°♄29'10	
direct	2458 Aug 21 23:51	18°♄12'12		opposition	2464 Aug 22 02:12	0°♄07'36	-1°-28'-35
evening set	2458 Dec 02 08:01	25°♄18'40		min. Earth dist.	2464 Aug 22 06:39	0°♄06'46	8.86410 AU
					2464 Aug 23 18:40	30°♄	
conjunction	2458 Dec 19 00:17	27°♄15'57	1°08'28	direct	2464 Oct 30 13:45	26°♄48'32	
minimum elong	2458 Dec 19 00:19	27°♄15'58	1°08'28		2465 Jan 01 19:52	0°♄	
max. Earth dist.	2458 Dec 18 20:36	27°♄14'52	11.04363 AU	evening set	2465 Feb 07 07:14	3°♄55'56	
morning rise	2459 Jan 04 14:59	29°♄12'48					
	2459 Jan 11 12:16	0°♄		conjunction	2465 Feb 24 01:01	5°♄56'19	-1°-23'-26
retrograde	2459 Apr 14 17:57	6°♄11'28		minimum elong	2465 Feb 24 00:58	5°♄56'18	1°23'27
opposition	2459 Jun 24 00:02	2°♄54'16	1°09'15	max. Earth dist.	2465 Feb 23 20:32	5°♄54'58	10.81924 AU
min. Earth dist.	2459 Jun 24 03:44	2°♄53'35	9.05488 AU	morning rise	2465 Mar 12 21:45	7°♄57'38	
	2459 Aug 11 02:40	30°♄		retrograde	2465 Jun 24 23:28	15°♄23'24	
direct	2459 Sep 03 01:18	29°♄35'02		opposition	2465 Sep 03 16:03	12°♄00'28	-1°-55'-32



min. Earth dist.	2465 Sep 03 19:22	11° <del>✕</del> 59'50	8.77168 AU		2471 Nov 15 10:41	30° <del>℞</del>	
direct	2465 Nov 11 16:10	8° <del>✕</del> 40'50		opposition	2471 Nov 21 17:13	29° <del>♄</del> 29'29	-2°-21'-39
evening set	2466 Feb 19 09:10	15° <del>✕</del> 53'23		min. Earth dist.	2471 Nov 21 15:15	29° <del>♄</del> 29'53	8.15089 AU
				direct	2472 Jan 27 06:31	26° <del>♄</del> 03'51	
conjunction	2466 Mar 08 04:40	17° <del>✕</del> 55'28	-1°-43'-29		2472 Apr 04 07:15	0° <del>♂</del>	
minimum elong	2466 Mar 08 04:38	17° <del>✕</del> 55'27	1°43'31	evening set	2472 May 08 15:17	4° <del>♂</del> 02'00	
max. Earth dist.	2466 Mar 08 00:57	17° <del>✕</del> 54'20	10.72036 AU				
morning rise	2466 Mar 25 03:39	19° <del>✕</del> 58'41		conjunction	2472 May 26 09:51	6° <del>♂</del> 19'03	-1°-44'-32
retrograde	2466 Jul 08 00:20	27° <del>✕</del> 33'05		minimum elong	2472 May 26 09:55	6° <del>♂</del> 19'04	1°44'33
opposition	2466 Sep 16 10:41	24° <del>✕</del> 08'44	-2°-18'00	max. Earth dist.	2472 May 26 12:44	6° <del>♂</del> 19'59	10.11510 AU
min. Earth dist.	2466 Sep 16 13:10	24° <del>✕</del> 08'16	8.66796 AU	morning rise	2472 Jun 13 07:53	8° <del>♂</del> 37'14	
direct	2466 Nov 23 21:36	20° <del>✕</del> 48'22		retrograde	2472 Sep 28 00:42	16° <del>♂</del> 55'02	
evening set	2467 Mar 03 18:50	28° <del>✕</del> 07'16		opposition	2472 Dec 04 18:21	13° <del>♂</del> 25'27	-1°-56'-31
	2467 Mar 19 03:36	0° <del>♂</del>		min. Earth dist.	2472 Dec 04 15:25	13° <del>♂</del> 26'03	8.08694 AU
				direct	2473 Feb 09 04:30	9° <del>♂</del> 58'47	
conjunction	2467 Mar 20 16:35	0° <del>♂</del> 11'23	-1°-59'-17	evening set	2473 May 23 07:48	18° <del>♂</del> 03'19	
minimum elong	2467 Mar 20 16:33	0° <del>♂</del> 11'23	1°59'19				
max. Earth dist.	2467 Mar 20 12:55	0° <del>♂</del> 10'16	10.61227 AU	conjunction	2473 Jun 10 06:40	20° <del>♂</del> 22'24	-1°-21'-9
morning rise	2467 Apr 06 18:29	2° <del>♂</del> 16'48		minimum elong	2473 Jun 10 06:43	20° <del>♂</del> 22'25	1°21'10
retrograde	2467 Jul 21 07:57	10° <del>♂</del> 00'18		max. Earth dist.	2473 Jun 10 10:20	20° <del>♂</del> 23'35	10.06346 AU
opposition	2467 Sep 29 10:40	6° <del>♂</del> 34'37	-2°-34'-39	morning rise	2473 Jun 28 08:13	22° <del>♂</del> 42'21	
min. Earth dist.	2467 Sep 29 12:52	6° <del>♂</del> 34'11	8.55719 AU		2473 Sep 08 20:44	0° <del>♄</del>	
direct	2467 Dec 06 09:53	3° <del>♂</del> 13'19		retrograde	2473 Oct 12 15:04	1° <del>♄</del> 01'11	
evening set	2468 Mar 15 13:18	10° <del>♂</del> 39'35			2473 Nov 15 11:35	30° <del>℞</del>	
				opposition	2473 Dec 18 22:00	27° <del>♂</del> 31'46	-1°-24'-4
conjunction	2468 Apr 01 13:59	12° <del>♂</del> 46'02	-2°-9'-47	min. Earth dist.	2473 Dec 18 18:45	27° <del>♂</del> 32'26	8.04778 AU
minimum elong	2468 Apr 01 13:58	12° <del>♂</del> 46'01	2°09'48	direct	2474 Feb 23 09:12	24° <del>♂</del> 04'10	
max. Earth dist.	2468 Apr 01 10:37	12° <del>♂</del> 44'59	10.49958 AU		2474 May 20 06:20	0° <del>♄</del>	
morning rise	2468 Apr 18 19:19	14° <del>♂</del> 53'54		evening set	2474 Jun 07 06:28	2° <del>♄</del> 13'34	
retrograde	2468 Aug 02 23:09	22° <del>♂</del> 46'29					
opposition	2468 Oct 11 16:11	19° <del>♂</del> 19'34	-2°-44'-13	conjunction	2474 Jun 25 08:37	4° <del>♄</del> 34'00	0°-52'-42
min. Earth dist.	2468 Oct 11 18:06	19° <del>♂</del> 19'11	8.44438 AU	minimum elong	2474 Jun 25 08:40	4° <del>♄</del> 34'01	0°52'42
direct	2468 Dec 18 04:06	15° <del>♂</del> 57'14		max. Earth dist.	2474 Jun 25 12:50	4° <del>♄</del> 35'22	10.03808 AU
evening set	2469 Mar 28 17:09	23° <del>♂</del> 31'30		morning rise	2474 Jul 13 12:26	6° <del>♄</del> 54'57	
				retrograde	2474 Oct 27 03:45	15° <del>♄</del> 12'13	
conjunction	2469 Apr 14 21:39	25° <del>♂</del> 40'32	-2°-14'-3	opposition	2475 Jan 02 02:30	11° <del>♄</del> 43'17	0°-46'-16
minimum elong	2469 Apr 14 21:39	25° <del>♂</del> 40'32	2°14'04	min. Earth dist.	2475 Jan 01 22:59	11° <del>♄</del> 44'00	8.03592 AU
max. Earth dist.	2469 Apr 14 19:42	25° <del>♂</del> 39'55	10.38771 AU	direct	2475 Mar 09 18:57	8° <del>♄</del> 14'55	
morning rise	2469 May 02 06:51	27° <del>♂</del> 51'04		evening set	2475 Jun 22 08:31	16° <del>♄</del> 27'20	
	2469 May 20 05:58	0° <del>♄</del>					
retrograde	2469 Aug 16 21:01	5° <del>♄</del> 52'13		conjunction	2475 Jul 10 12:33	18° <del>♄</del> 48'14	0°-20'-58
opposition	2469 Oct 25 03:26	2° <del>♄</del> 24'12	-2°-45'-38	minimum elong	2475 Jul 10 12:34	18° <del>♄</del> 48'15	0°20'59
min. Earth dist.	2469 Oct 25 04:21	2° <del>♄</del> 24'01	8.33520 AU	max. Earth dist.	2475 Jul 10 17:18	18° <del>♄</del> 49'47	10.04038 AU
	2469 Nov 27 17:23	30° <del>℞</del>		morning rise	2475 Jul 28 16:58	21° <del>♄</del> 09'14	
direct	2469 Dec 31 05:57	29° <del>♂</del> 00'47		retrograde	2475 Nov 10 12:31	29° <del>♄</del> 22'37	
	2470 Feb 02 05:51	0° <del>♄</del>		opposition	2476 Jan 16 06:34	25° <del>♄</del> 54'26	0°-5'-40
evening set	2470 Apr 11 06:49	6° <del>♄</del> 43'20		min. Earth dist.	2476 Jan 16 02:36	25° <del>♄</del> 55'15	8.05177 AU
				asc. node	2476 Mar 08 17:30	22° <del>♄</del> 37'18	
conjunction	2470 Apr 28 15:48	8° <del>♄</del> 55'06	-2°-11'-25	direct	2476 Mar 23 06:44	22° <del>♄</del> 25'33	
minimum elong	2470 Apr 28 15:50	8° <del>♄</del> 55'07	2°11'25		2476 Jul 01 07:34	0° <del>♂</del>	
max. Earth dist.	2470 Apr 28 15:48	8° <del>♄</del> 55'06	10.28247 AU	evening set	2476 Jul 06 10:51	0° <del>♂</del> 38'50	
morning rise	2470 May 16 05:16	11° <del>♄</del> 08'21					
	2470 Jun 18 10:08	15° <del>♄</del>		conjunction	2476 Jul 24 15:03	2° <del>♂</del> 59'18	0°11'58
retrograde	2470 Aug 31 01:04	19° <del>♄</del> 16'57		minimum elong	2476 Jul 24 15:03	2° <del>♂</del> 59'18	0°11'59
opposition	2470 Nov 07 20:01	15° <del>♄</del> 48'04	-2°-38'-11	behind sun begin	2476 Jul 24 10:06	2° <del>♂</del> 57'43	
min. Earth dist.	2470 Nov 07 19:24	15° <del>♄</del> 48'12	8.23543 AU	behind sun end	2476 Jul 24 19:59	3° <del>♂</del> 00'53	
	2470 Nov 17 21:05	15° <del>℞</del>		max. Earth dist.	2476 Jul 24 20:08	3° <del>♂</del> 00'56	10.06960 AU
direct	2471 Jan 13 15:28	12° <del>♄</del> 23'33		morning rise	2476 Aug 11 18:18	5° <del>♂</del> 19'25	
	2471 Mar 09 03:32	15° <del>♄</del>		retrograde	2476 Nov 23 17:29	13° <del>♂</del> 27'03	
evening set	2471 Apr 25 06:29	20° <del>♄</del> 14'12		opposition	2477 Jan 29 08:31	9° <del>♂</del> 59'48	0°34'58
				min. Earth dist.	2477 Jan 29 04:14	10° <del>♂</del> 00'41	8.09338 AU
conjunction	2471 May 12 20:18	22° <del>♄</del> 28'44	-2°-1'-32	direct	2477 Apr 06 18:09	6° <del>♂</del> 30'38	
minimum elong	2471 May 12 20:20	22° <del>♄</del> 28'45	2°01'32	evening set	2477 Jul 21 10:58	14° <del>♂</del> 42'53	
max. Earth dist.	2471 May 12 21:54	22° <del>♄</del> 29'15	10.18970 AU		2477 Jul 23 17:07	15° <del>♂</del>	
morning rise	2471 May 30 14:08	24° <del>♄</del> 44'36					
	2471 Jul 16 11:17	0° <del>♂</del>		conjunction	2477 Aug 08 13:42	17° <del>♂</del> 02'02	0°43'51
retrograde	2471 Sep 14 10:49	2° <del>♂</del> 58'53		minimum elong	2477 Aug 08 13:40	17° <del>♂</del> 02'02	0°43'51



max. Earth dist.	2477 Aug 08 18:41	17°03'39	10.12266 AU	retrograde	2484 Feb 22 11:26	14°05'58"26	
morning rise	2477 Aug 26 14:08	19°02'08		opposition	2484 Apr 30 20:25	11°03'39"17	2°40'40
retrograde	2477 Dec 07 17:14	27°02'01		min. Earth dist.	2484 Apr 30 19:36	11°03'39"26	8.76206 AU
opposition	2478 Feb 12 07:11	23°05'56	1°13'01	direct	2484 Jul 10 12:56	8°03'15"09	
min. Earth dist.	2478 Feb 12 03:00	23°05'54"47	8.15696 AU		2484 Oct 17 00:38	15°03'00	
direct	2478 Apr 21 03:55	20°02'54"49		evening set	2484 Oct 23 05:32	15°03'43"30	
evening set	2478 Aug 05 06:17	28°03'51"18					
	2478 Aug 16 09:55	0°00'00		conjunction	2484 Nov 09 04:22	17°03'45"17	2°06'46
				minimum elong	2484 Nov 09 04:23	17°03'45"17	2°06'46
conjunction	2478 Aug 23 06:03	0°00'52"28	1°12'48	max. Earth dist.	2484 Nov 09 04:47	17°03'45"24	10.80829 AU
minimum elong	2478 Aug 23 06:00	0°00'52"27	1°12'48	morning rise	2484 Nov 25 23:10	19°03'45"54	
max. Earth dist.	2478 Aug 23 10:41	0°00'53"58	10.19557 AU	retrograde	2485 Mar 05 12:25	26°03'53"53	
morning rise	2478 Sep 10 02:23	3°00'08"36		opposition	2485 May 13 09:07	23°03'35"25	2°29'00
retrograde	2478 Dec 21 10:21	11°00'01"20		min. Earth dist.	2485 May 13 09:35	23°03'35"19	8.85381 AU
opposition	2479 Feb 26 02:03	7°00'36"32	1°46'12	direct	2485 Jul 23 07:17	20°03'12"23	
min. Earth dist.	2479 Feb 25 22:31	7°00'37"15	8.23875 AU	evening set	2485 Nov 04 08:15	27°03'33"23	
direct	2479 May 05 10:54	4°00'07"47					
evening set	2479 Aug 19 18:24	12°00'12"51		conjunction	2485 Nov 21 04:23	29°03'33"23	1°54'54
				minimum elong	2485 Nov 21 04:25	29°03'33"24	1°54'54
conjunction	2479 Sep 06 14:02	14°00'27"31	1°37'11	max. Earth dist.	2485 Nov 21 03:18	29°03'33"04	10.89342 AU
minimum elong	2479 Sep 06 13:59	14°00'27"30	1°37'11		2485 Nov 24 21:22	0°00'00	
max. Earth dist.	2479 Sep 06 17:58	14°00'28"46	10.28479 AU	morning rise	2485 Dec 07 21:13	1°00'32"27	
morning rise	2479 Sep 24 05:33	16°00'40"56		retrograde	2486 Mar 17 10:00	8°00'36"02	
retrograde	2480 Jan 03 19:41	24°00'25"24		opposition	2486 May 25 17:55	5°00'18"04	2°11'20
opposition	2480 Mar 10 16:20	21°00'01"56	2°12'48	min. Earth dist.	2486 May 25 19:18	5°00'17"48	8.93127 AU
min. Earth dist.	2480 Mar 10 13:40	21°00'02"28	8.33496 AU	direct	2486 Aug 04 20:49	1°00'56"07	
direct	2480 May 18 13:47	17°00'33"47		evening set	2486 Nov 16 03:56	9°00'10"33	
evening set	2480 Sep 01 21:46	25°00'32"58					
				conjunction	2486 Dec 02 22:06	11°00'09"13	1°38'27
conjunction	2480 Sep 19 12:43	27°00'44"50	1°55'51	minimum elong	2486 Dec 02 22:08	11°00'09"14	1°38'27
minimum elong	2480 Sep 19 12:40	27°00'44"49	1°55'51	max. Earth dist.	2486 Dec 02 20:01	11°00'08"36	10.96285 AU
max. Earth dist.	2480 Sep 19 15:30	27°00'45"43	10.38617 AU	morning rise	2486 Dec 19 13:43	13°00'07"08	
morning rise	2480 Oct 06 23:14	29°00'55"21		retrograde	2487 Mar 29 05:36	20°00'07"43	
	2480 Oct 07 14:22	0°00'00		opposition	2487 Jun 06 23:38	16°00'50"01	1°48'38
retrograde	2481 Jan 15 21:42	7°00'31"26		min. Earth dist.	2487 Jun 07 01:02	16°00'49"45	8.99155 AU
opposition	2481 Mar 24 01:18	4°00'09"14	2°31'46	direct	2487 Aug 17 03:51	13°00'29"07	
min. Earth dist.	2481 Mar 23 23:34	4°00'09"35	8.44084 AU	evening set	2487 Nov 27 18:02	20°00'38"00	
direct	2481 Jun 01 11:13	0°00'41"53					
evening set	2481 Sep 15 15:09	8°00'34"02		conjunction	2487 Dec 14 10:58	22°00'35"43	1°18'13
				minimum elong	2487 Dec 14 11:00	22°00'35"44	1°18'13
conjunction	2481 Oct 03 01:22	10°00'43"05	2°08'11	max. Earth dist.	2487 Dec 14 08:59	22°00'35"08	11.01393 AU
minimum elong	2481 Oct 03 01:20	10°00'43"04	2°08'11	morning rise	2487 Dec 31 01:52	24°00'32"54	
max. Earth dist.	2481 Oct 03 02:49	10°00'43"32	10.49456 AU		2488 Feb 25 11:33	0°00'00	
morning rise	2481 Oct 20 07:07	12°00'50"44		retrograde	2488 Apr 09 00:34	1°00'31"59	
retrograde	2482 Jan 28 15:43	20°00'18"39			2488 May 24 00:02	30°00'00	
opposition	2482 Apr 06 04:57	16°00'57"37	2°42'38	opposition	2488 Jun 18 03:10	28°00'14"20	1°21'53
min. Earth dist.	2482 Apr 06 03:32	16°00'57"54	8.55087 AU	min. Earth dist.	2488 Jun 18 04:29	28°00'14"06	9.03236 AU
direct	2482 Jun 15 03:12	13°00'31"15		direct	2488 Aug 28 07:06	24°00'54"20	
evening set	2482 Sep 28 22:00	21°00'15"38			2488 Nov 20 09:52	0°00'00	
				evening set	2488 Dec 08 04:34	1°00'58"58	
conjunction	2482 Oct 16 03:48	23°00'21"57	2°13'57				
minimum elong	2482 Oct 16 03:48	23°00'21"57	2°13'56	conjunction	2488 Dec 24 20:39	3°00'56"07	0°55'04
max. Earth dist.	2482 Oct 16 04:40	23°00'22"13	10.60445 AU	minimum elong	2488 Dec 24 20:40	3°00'56"07	0°55'03
morning rise	2482 Nov 02 05:10	25°00'26"56		max. Earth dist.	2488 Dec 24 18:34	3°00'55"30	11.04466 AU
	2482 Dec 14 08:52	0°00'00		morning rise	2489 Jan 10 11:19	5°00'52"55	
retrograde	2483 Feb 10 03:28	2°00'47"18		retrograde	2489 Apr 20 20:52	12°00'51"59	
	2483 Apr 12 01:04	30°00'00		opposition	2489 Jun 30 05:33	9°00'34"14	0°52'08
opposition	2483 Apr 19 03:15	29°00'27"17	2°45'27	min. Earth dist.	2489 Jun 30 07:41	9°00'33"50	9.05222 AU
min. Earth dist.	2483 Apr 19 01:51	29°00'27"33	8.65960 AU	direct	2489 Sep 09 05:42	6°00'14"59	
direct	2483 Jun 28 12:33	26°00'02"01		evening set	2489 Dec 19 13:08	13°00'16"42	
	2483 Sep 08 22:17	0°00'00					
evening set	2483 Oct 11 18:32	3°00'38"19		conjunction	2490 Jan 05 04:35	15°00'13"37	0°29'51
				minimum elong	2490 Jan 05 04:36	15°00'13"38	0°29'50
conjunction	2483 Oct 28 20:34	5°00'42"11	2°13'20	max. Earth dist.	2490 Jan 05 01:17	15°00'12"39	11.05401 AU
minimum elong	2483 Oct 28 20:35	5°00'42"11	2°13'20	morning rise	2490 Jan 21 19:40	17°00'10"28	
max. Earth dist.	2483 Oct 28 21:28	5°00'42"28	10.71061 AU	retrograde	2490 May 02 15:45	24°00'11"03	
morning rise	2483 Nov 14 18:13	7°00'44"47		opposition	2490 Jul 12 08:01	20°00'52"56	0°20'25



min. Earth dist.	2490 Jul 12 11:00	20°♄52'23	9.05058 AU	morning rise	2496 Mar 31 11:26	27°♄00'38	
direct	2490 Sep 21 01:27	17°♄34'14			2496 Apr 26 19:48	0°♄	
evening set	2490 Dec 30 21:07	24°♄34'29		retrograde	2496 Jul 14 15:19	4°♄38'20	
				opposition	2496 Sep 22 23:22	1°♄14'02	-2°-27'-42
conjunction	2491 Jan 16 12:24	26°♄31'32	0°03'30	min. Earth dist.	2496 Sep 23 01:39	1°♄13'35	8.64204 AU
minimum elong	2491 Jan 16 12:24	26°♄31'32	0°03'30		2496 Oct 09 09:43	30°♄	
behind sun begin	2491 Jan 16 05:29	26°♄29'31		direct	2496 Nov 30 05:28	27°♄53'56	
behind sun end	2491 Jan 16 19:20	26°♄33'33			2497 Jan 18 22:42	0°♄	
max. Earth dist.	2491 Jan 16 08:31	26°♄30'25	11.04170 AU	evening set	2497 Mar 10 03:53	5°♄15'08	
morning rise	2491 Feb 02 04:16	28°♄28'44					
	2491 Feb 15 15:51	0°♄		conjunction	2497 Mar 27 03:02	7°♄20'01	-2°-5'-37
desc. node	2491 Mar 05 22:12	1°♄53'07		minimum elong	2497 Mar 27 03:00	7°♄20'01	2°05'39
retrograde	2491 May 14 15:17	5°♄32'25		max. Earth dist.	2497 Mar 27 00:39	7°♄19'17	10.58566 AU
opposition	2491 Jul 24 11:14	2°♄13'41	0°-12'-10	morning rise	2497 Apr 13 06:21	9°♄26'15	
min. Earth dist.	2491 Jul 24 14:17	2°♄13'07	9.02744 AU	retrograde	2497 Jul 28 03:24	17°♄12'58	
	2491 Aug 26 14:24	30°♄		opposition	2497 Oct 06 01:17	13°♄47'20	-2°-40'-32
direct	2491 Oct 02 23:15	28°♄55'19		min. Earth dist.	2497 Oct 06 02:51	13°♄47'01	8.53021 AU
	2491 Nov 08 09:17	0°♄		direct	2497 Dec 12 19:02	10°♄26'15	
evening set	2492 Jan 11 06:26	5°♄55'35		evening set	2498 Mar 23 02:19	17°♄55'04	
conjunction	2492 Jan 27 22:02	7°♄53'06	0°-23'-13	conjunction	2498 Apr 09 04:49	20°♄02'24	-2°-12'-46
minimum elong	2492 Jan 27 22:01	7°♄53'06	0°23'14	minimum elong	2498 Apr 09 04:49	20°♄02'24	2°12'48
max. Earth dist.	2492 Jan 27 18:46	7°♄52'09	11.00806 AU	max. Earth dist.	2498 Apr 09 02:31	20°♄01'41	10.47207 AU
morning rise	2492 Feb 13 14:47	9°♄51'01		morning rise	2498 Apr 26 11:49	22°♄11'12	
	2492 Apr 05 08:56	15°♄			2498 Jul 30 10:35	0°♄	
retrograde	2492 May 25 18:58	16°♄59'11		retrograde	2498 Aug 10 21:31	0°♄06'44	
	2492 Jul 17 01:30	15°♄			2498 Aug 22 07:42	30°♄	
opposition	2492 Aug 04 16:01	13°♄39'38	0°-44'-33	opposition	2498 Oct 19 08:45	26°♄39'53	-2°-45'-45
min. Earth dist.	2492 Aug 04 18:26	13°♄39'11	8.98356 AU	min. Earth dist.	2498 Oct 19 09:54	26°♄39'40	8.41678 AU
direct	2492 Oct 13 18:47	10°♄21'25		direct	2498 Dec 25 15:35	23°♄17'39	
	2492 Dec 31 09:18	15°♄			2499 Mar 28 23:28	0°♄	
evening set	2493 Jan 21 18:39	17°♄23'10		evening set	2499 Apr 05 10:26	0°♄54'41	
conjunction	2493 Feb 07 10:48	19°♄21'29	0°-49'-10	conjunction	2499 Apr 22 16:59	3°♄04'43	-2°-13'-22
minimum elong	2493 Feb 07 10:46	19°♄21'29	0°49'10	minimum elong	2499 Apr 22 16:59	3°♄04'43	2°13'23
max. Earth dist.	2493 Feb 07 07:43	19°♄20'34	10.95425 AU	max. Earth dist.	2499 Apr 22 14:35	3°♄03'58	10.36024 AU
morning rise	2493 Feb 24 04:47	21°♄20'26		morning rise	2499 May 10 04:13	5°♄16'14	
retrograde	2493 Jun 07 03:07	28°♄34'28		retrograde	2499 Aug 24 21:43	13°♄19'49	
opposition	2493 Aug 16 23:50	25°♄13'55	-1°-15'-33	opposition	2499 Nov 01 21:49	9°♄51'54	-2°-42'-28
min. Earth dist.	2493 Aug 17 02:12	25°♄13'29	8.92052 AU	min. Earth dist.	2499 Nov 01 22:53	9°♄51'41	8.30828 AU
direct	2493 Oct 25 15:40	21°♄55'36		direct	2500 Jan 07 20:18	6°♄28'24	
evening set	2494 Feb 02 11:07	29°♄00'16		evening set	2500 Apr 19 04:16	14°♄13'44	
	2494 Feb 10 20:45	0°♄			2500 Apr 25 07:28	15°♄	
conjunction	2494 Feb 19 04:04	0°♄59'43	-1°-13'-25	conjunction	2500 May 06 15:24	16°♄26'32	-2°-6'-52
minimum elong	2494 Feb 19 04:02	0°♄59'42	1°13'26	minimum elong	2500 May 06 15:26	16°♄26'33	2°06'53
max. Earth dist.	2494 Feb 19 00:26	0°♄58'38	10.88230 AU	max. Earth dist.	2500 May 06 13:55	16°♄26'04	10.25674 AU
morning rise	2494 Mar 07 23:49	3°♄00'01		morning rise	2500 May 24 07:06	18°♄40'47	
retrograde	2494 Jun 19 17:21	10°♄21'06		retrograde	2500 Sep 08 03:22	26°♄51'02	
opposition	2494 Aug 29 11:18	6°♄59'25	-1°-43'-55	opposition	2500 Nov 15 15:53	23°♄22'17	-2°-30'-13
min. Earth dist.	2494 Aug 29 14:04	6°♄58'54	8.84066 AU	min. Earth dist.	2500 Nov 15 16:23	23°♄22'11	8.21121 AU
direct	2494 Nov 06 15:30	3°♄40'43		direct	2501 Jan 21 08:09	19°♄57'27	
evening set	2495 Feb 14 09:25	10°♄49'42		evening set	2501 May 03 07:30	27°♄50'43	
conjunction	2495 Mar 03 03:45	12°♄50'37	-1°-34'-57	conjunction	2501 May 20 23:35	0°♄06'13	-1°-53'-13
minimum elong	2495 Mar 03 03:43	12°♄50'36	1°34'58	minimum elong	2501 May 20 23:38	0°♄06'14	1°53'13
max. Earth dist.	2495 Mar 02 23:54	12°♄49'27	10.79482 AU		2501 May 20 04:17	0°♄	
morning rise	2495 Mar 20 01:39	14°♄52'36		max. Earth dist.	2501 May 20 23:37	0°♄06'14	10.16785 AU
retrograde	2495 Jul 02 12:35	22°♄21'39		morning rise	2501 Jun 07 19:39	2°♄23'00	
opposition	2495 Sep 11 02:52	18°♄58'42	-2°-8'-24	retrograde	2501 Sep 22 13:28	10°♄38'00	
min. Earth dist.	2495 Sep 11 05:49	18°♄58'08	8.74680 AU	opposition	2501 Nov 29 14:08	7°♄08'40	-2°-9'-8
direct	2495 Nov 18 19:34	15°♄39'24		min. Earth dist.	2501 Nov 29 13:35	7°♄08'47	8.13148 AU
evening set	2496 Feb 26 14:39	22°♄53'57		direct	2502 Feb 04 03:13	3°♄42'33	
				evening set	2502 May 17 19:16	11°♄42'55	
conjunction	2496 Mar 14 11:06	24°♄56'41	-1°-52'-42				
minimum elong	2496 Mar 14 11:03	24°♄56'40	1°52'43	conjunction	2502 Jun 04 16:07	14°♄00'48	-1°-32'-48
max. Earth dist.	2496 Mar 14 08:03	24°♄55'45	10.69479 AU	minimum elong	2502 Jun 04 16:10	14°♄00'49	1°32'49



max. Earth dist.	2502 Jun 04 17:52	14°II01'22	10.09893 AU	evening set	2508 Aug 13 06:10	5°mp59'03	
morning rise	2502 Jun 22 16:01	16°II19'42					
retrograde	2502 Oct 07 01:37	24°II37'10		conjunction	2508 Aug 31 03:54	8°mp15'05	1°26'07
opposition	2502 Dec 13 15:32	21°II07'35	-1°-40'-6	minimum elong	2508 Aug 31 03:50	8°mp15'04	1°26'07
min. Earth dist.	2502 Dec 13 13:39	21°II07'59	8.07387 AU	max. Earth dist.	2508 Aug 31 07:35	8°mp16'16	10.22730 AU
direct	2503 Feb 18 04:26	17°II40'18		morning rise	2508 Sep 17 22:05	10°mp30'00	
evening set	2503 Jun 01 14:05	25°II46'32		retrograde	2508 Dec 28 18:49	18°mp18'50	
				opposition	2509 Mar 05 14:39	14°mp54'12	2°00'57
conjunction	2503 Jun 19 14:51	28°II06'12	-1°-6'-40	min. Earth dist.	2509 Mar 05 10:57	14°mp54'57	8.27527 AU
minimum elong	2503 Jun 19 14:54	28°II06'13	1°06'40	direct	2509 May 13 07:27	11°mp25'14	
max. Earth dist.	2503 Jun 19 18:02	28°II07'14	10.05410 AU	evening set	2509 Aug 27 13:49	19°mp27'40	
	2503 Jul 04 06:24	0°♄					
morning rise	2503 Jul 07 17:33	0°♄26'33		conjunction	2509 Sep 14 07:14	21°mp41'02	1°47'38
retrograde	2503 Oct 21 14:16	8°♄44'02		minimum elong	2509 Sep 14 07:10	21°mp41'01	1°47'37
opposition	2503 Dec 27 18:44	5°♄14'35	-1°-4'-42	max. Earth dist.	2509 Sep 14 11:04	21°mp42'15	10.32545 AU
min. Earth dist.	2503 Dec 27 15:50	5°♄15'11	8.04196 AU	morning rise	2509 Oct 01 20:21	23°mp53'05	
direct	2504 Mar 03 10:00	1°♄46'18			2509 Nov 30 04:17	0°♄	
evening set	2504 Jun 15 13:42	9°♄56'45		retrograde	2510 Jan 11 01:44	1°♄33'28	
					2510 Feb 22 19:53	30°♄mp	
conjunction	2504 Jul 03 17:05	12°♄17'27	0°-36'-21	opposition	2510 Mar 19 01:59	28°mp10'13	2°23'39
minimum elong	2504 Jul 03 17:07	12°♄17'28	0°36'21	min. Earth dist.	2510 Mar 18 22:23	28°mp10'56	8.37951 AU
max. Earth dist.	2504 Jul 03 21:03	12°♄18'44	10.03621 AU	direct	2510 May 27 06:11	24°mp42'07	
morning rise	2504 Jul 21 21:13	14°♄38'25			2510 Aug 19 01:30	0°♄	
retrograde	2504 Nov 04 01:38	22°♄53'32		evening set	2510 Sep 10 12:02	2°♄37'58	
opposition	2505 Jan 09 22:26	19°♄24'33	0°-25'-13				
min. Earth dist.	2505 Jan 09 19:10	19°♄25'14	8.03780 AU	conjunction	2510 Sep 28 00:45	4°♄48'30	2°03'02
direct	2505 Mar 17 18:15	15°♄55'28		minimum elong	2510 Sep 28 00:42	4°♄48'29	2°03'01
evening set	2505 Jun 30 15:30	24°♄08'15		max. Earth dist.	2510 Sep 28 04:31	4°♄49'40	10.43384 AU
				morning rise	2510 Oct 15 08:45	6°♄57'36	
conjunction	2505 Jul 18 19:53	26°♄29'05	0°-3'-52	retrograde	2511 Jan 24 00:04	14°♄29'38	
minimum elong	2505 Jul 18 19:54	26°♄29'05	0°03'52	opposition	2511 Apr 01 08:16	11°♄07'47	2°38'23
behind sun begin	2505 Jul 18 12:37	26°♄26'44		min. Earth dist.	2511 Apr 01 05:23	11°♄08'21	8.49112 AU
behind sun end	2505 Jul 19 03:11	26°♄31'25		direct	2511 Jun 10 00:11	7°♄40'46	
max. Earth dist.	2505 Jul 19 00:06	26°♄30'24	10.04624 AU	evening set	2511 Sep 23 23:53	15°♄29'07	
morning rise	2505 Aug 05 23:51	28°♄49'45					
	2505 Aug 15 07:56	0°♄		conjunction	2511 Oct 11 07:57	17°♄36'49	2°11'55
asc. node	2505 Aug 31 17:56	1°♄56'54		minimum elong	2511 Oct 11 07:55	17°♄36'49	2°11'55
retrograde	2505 Nov 18 09:56	7°♄00'22		max. Earth dist.	2511 Oct 11 11:00	17°♄37'46	10.54676 AU
opposition	2506 Jan 24 01:09	3°♄32'10	0°15'40	morning rise	2511 Oct 28 11:18	19°♄43'07	
min. Earth dist.	2506 Jan 23 21:56	3°♄32'49	8.06147 AU	retrograde	2512 Feb 05 15:14	27°♄07'17	
direct	2506 Apr 01 05:14	0°♄02'34		opposition	2512 Apr 13 09:15	23°♄46'44	2°44'59
evening set	2506 Jul 15 16:50	8°♄15'41		min. Earth dist.	2512 Apr 13 07:33	23°♄47'03	8.60441 AU
				direct	2512 Jun 22 12:07	20°♄20'55	
conjunction	2506 Aug 02 20:28	10°♄35'41	0°28'49	evening set	2512 Oct 06 01:37	28°♄01'20	
minimum elong	2506 Aug 02 20:26	10°♄35'41	0°28'50		2512 Oct 22 08:28	0°♄	
max. Earth dist.	2506 Aug 03 00:26	10°♄36'58	10.08329 AU				
morning rise	2506 Aug 20 22:30	12°♄55'09		conjunction	2512 Oct 23 05:25	0°♄06'24	2°14'17
	2506 Sep 06 20:18	15°♄		minimum elong	2512 Oct 23 05:25	0°♄06'24	2°14'17
retrograde	2506 Dec 02 11:46	20°♄59'31		max. Earth dist.	2512 Oct 23 06:53	0°♄06'51	10.65867 AU
opposition	2507 Feb 07 01:25	17°♄32'22	0°55'16	morning rise	2512 Nov 09 04:53	2°♄10'10	
min. Earth dist.	2507 Feb 06 22:23	17°♄32'59	8.11130 AU	retrograde	2513 Feb 17 00:50	9°♄27'08	
	2507 Mar 13 19:10	15°♄♄		opposition	2513 Apr 26 04:55	6°♄07'43	2°43'43
direct	2507 Apr 15 16:55	14°♄02'37		min. Earth dist.	2513 Apr 26 03:54	6°♄07'55	8.71389 AU
	2507 May 18 11:51	15°♄		direct	2513 Jul 05 16:52	2°♄43'12	
evening set	2507 Jul 30 14:38	22°♄14'02		evening set	2513 Oct 18 17:35	10°♄15'36	
conjunction	2507 Aug 17 15:54	24°♄32'21	0°59'23	conjunction	2513 Nov 04 17:47	12°♄18'22	2°10'29
minimum elong	2507 Aug 17 15:51	24°♄32'21	0°59'24	minimum elong	2513 Nov 04 17:48	12°♄18'23	2°10'28
max. Earth dist.	2507 Aug 17 19:33	24°♄33'32	10.14492 AU	max. Earth dist.	2513 Nov 04 18:16	12°♄18'31	10.76436 AU
morning rise	2507 Sep 04 14:32	26°♄49'49		morning rise	2513 Nov 21 14:03	14°♄19'57	
	2507 Oct 01 03:20	0°mp			2513 Nov 27 06:21	15°♄	
retrograde	2507 Dec 16 06:34	4°mp46'47		retrograde	2514 Mar 01 04:16	21°♄30'42	
opposition	2508 Feb 20 22:17	1°mp20'50	1°31'01	opposition	2514 May 08 20:01	18°♄12'12	2°35'11
min. Earth dist.	2508 Feb 20 18:57	1°mp21'30	8.18409 AU	min. Earth dist.	2514 May 08 19:09	18°♄12'22	8.81460 AU
	2508 Mar 08 21:45	30°♄♄			2514 Jul 03 14:43	15°♄♄	
direct	2508 Apr 29 02:26	27°♄51'18		direct	2514 Jul 18 15:46	14°♄48'59	
	2508 Jun 18 09:19	0°mp			2514 Aug 02 14:27	15°♄	



evening set	2514 Oct 31 00:28	22° <del>ℳ</del> 13'40		desc. node	2520 Aug 23 16:28	24° <del>⌢</del> 50'20	
				direct	2520 Sep 27 19:25	23° <del>⌢</del> 53'00	
conjunction	2514 Nov 16 21:52	24° <del>ℳ</del> 14'28	2°01'02		2520 Dec 29 13:50	0° <del>≈</del>	
minimum elong	2514 Nov 16 21:54	24° <del>ℳ</del> 14'29	2°01'02	evening set	2521 Jan 06 08:54	0° <del>≈</del> 53'25	
max. Earth dist.	2514 Nov 16 22:14	24° <del>ℳ</del> 14'35	10.85917 AU				
morning rise	2514 Dec 03 15:36	26° <del>ℳ</del> 14'15		conjunction	2521 Jan 23 00:19	2° <del>≈</del> 50'46	0°-10'-50
	2515 Jan 07 11:28	0° <del>↗</del>		minimum elong	2521 Jan 23 00:19	2° <del>≈</del> 50'46	0°10'51
retrograde	2515 Mar 13 05:22	3° <del>↗</del> 19'58		behind sun begin	2521 Jan 22 18:57	2° <del>≈</del> 49'11	
opposition	2515 May 21 07:01	0° <del>↗</del> 02'10	2°20'14	behind sun end	2521 Jan 23 05:41	2° <del>≈</del> 52'20	
min. Earth dist.	2515 May 21 06:31	0° <del>↗</del> 02'15	8.90222 AU	max. Earth dist.	2521 Jan 22 19:17	2° <del>≈</del> 49'17	11.02231 AU
	2515 May 21 18:32	30° <del>ℳ</del>		morning rise	2521 Feb 08 16:36	4° <del>≈</del> 48'23	
direct	2515 Jul 31 08:02	26° <del>ℳ</del> 40'11		retrograde	2521 May 21 12:51	11° <del>≈</del> 54'35	
	2515 Oct 05 19:09	0° <del>↗</del>		opposition	2521 Jul 31 09:03	8° <del>≈</del> 35'27	0°-29'-34
evening set	2515 Nov 11 23:49	3° <del>↗</del> 57'45		min. Earth dist.	2521 Jul 31 13:26	8° <del>≈</del> 34'39	9.00002 AU
				direct	2521 Oct 09 15:00	5° <del>≈</del> 17'05	
conjunction	2515 Nov 28 19:01	5° <del>↗</del> 57'01	1°46'38	evening set	2522 Jan 17 19:57	12° <del>≈</del> 18'24	
minimum elong	2515 Nov 28 19:04	5° <del>↗</del> 57'02	1°46'39				
max. Earth dist.	2515 Nov 28 18:55	5° <del>↗</del> 56'59	10.93901 AU	conjunction	2522 Feb 03 11:42	14° <del>≈</del> 16'24	0°-37'-14
morning rise	2515 Dec 15 11:03	7° <del>↗</del> 55'24		minimum elong	2522 Feb 03 11:41	14° <del>≈</del> 16'24	0°37'15
retrograde	2516 Mar 24 03:19	14° <del>↗</del> 57'20		max. Earth dist.	2522 Feb 03 06:16	14° <del>≈</del> 14'47	10.97289 AU
opposition	2516 Jun 01 14:26	11° <del>↗</del> 39'59	1°59'46		2522 Feb 09 14:25	15° <del>≈</del>	
min. Earth dist.	2516 Jun 01 15:22	11° <del>↗</del> 39'48	8.97301 AU	morning rise	2522 Feb 20 05:14	16° <del>≈</del> 14'57	
direct	2516 Aug 11 16:45	8° <del>↗</del> 19'05		retrograde	2522 Jun 02 17:48	23° <del>≈</del> 26'31	
evening set	2516 Nov 22 17:03	15° <del>↗</del> 30'33		opposition	2522 Aug 12 15:53	20° <del>≈</del> 06'14	-1°-1'-23
				min. Earth dist.	2522 Aug 12 20:11	20° <del>≈</del> 05'26	8.94090 AU
conjunction	2516 Dec 09 10:31	17° <del>↗</del> 28'39	1°28'05	direct	2522 Oct 21 13:23	16° <del>≈</del> 47'40	
minimum elong	2516 Dec 09 10:33	17° <del>↗</del> 28'39	1°28'05	evening set	2523 Jan 29 10:25	23° <del>≈</del> 51'18	
max. Earth dist.	2516 Dec 09 08:34	17° <del>↗</del> 28'04	11.00033 AU				
morning rise	2516 Dec 26 01:40	19° <del>↗</del> 26'06		conjunction	2523 Feb 15 03:03	25° <del>≈</del> 50'21	-1°-2'-26
retrograde	2517 Apr 04 21:24	26° <del>↗</del> 25'42		minimum elong	2523 Feb 15 03:01	25° <del>≈</del> 50'20	1°02'27
opposition	2517 Jun 13 19:22	23° <del>↗</del> 08'33	1°34'49	max. Earth dist.	2523 Feb 14 22:30	25° <del>≈</del> 48'59	10.90441 AU
min. Earth dist.	2517 Jun 13 21:46	23° <del>↗</del> 08'06	9.02365 AU	morning rise	2523 Mar 03 22:01	27° <del>≈</del> 50'07	
direct	2517 Aug 23 22:21	19° <del>↗</del> 48'33			2523 Mar 23 01:52	0° <del>✕</del>	
evening set	2517 Dec 04 05:37	26° <del>↗</del> 55'09		retrograde	2523 Jun 15 06:09	5° <del>✕</del> 08'19	
				opposition	2523 Aug 25 01:43	1° <del>✕</del> 46'46	-1°-31'-11
conjunction	2517 Dec 20 21:53	28° <del>↗</del> 52'29	1°06'12	min. Earth dist.	2523 Aug 25 05:12	1° <del>✕</del> 46'07	8.86400 AU
minimum elong	2517 Dec 20 21:55	28° <del>↗</del> 52'30	1°06'12		2523 Sep 19 01:58	30° <del>ℳ</del>	
max. Earth dist.	2517 Dec 20 18:21	28° <del>↗</del> 51'26	11.04017 AU	direct	2523 Nov 02 12:45	28° <del>≈</del> 27'47	
	2517 Dec 30 11:04	0° <del>⌢</del>			2523 Dec 15 12:44	0° <del>✕</del>	
morning rise	2518 Jan 06 12:43	0° <del>⌢</del> 49'24		evening set	2524 Feb 10 06:04	5° <del>✕</del> 35'12	
retrograde	2518 Apr 16 16:43	7° <del>⌢</del> 48'20					
opposition	2518 Jun 25 22:41	4° <del>⌢</del> 31'05	1°06'21	conjunction	2524 Feb 26 23:54	7° <del>✕</del> 35'35	-1°-25'-23
min. Earth dist.	2518 Jun 26 01:38	4° <del>⌢</del> 30'32	9.05182 AU	minimum elong	2524 Feb 26 23:52	7° <del>✕</del> 35'35	1°25'24
direct	2518 Sep 05 00:30	1° <del>⌢</del> 11'51		max. Earth dist.	2524 Feb 26 20:01	7° <del>✕</del> 34'25	10.81936 AU
evening set	2518 Dec 15 15:18	8° <del>⌢</del> 14'57		morning rise	2524 Mar 14 20:39	9° <del>✕</del> 36'56	
				retrograde	2524 Jun 26 23:12	17° <del>✕</del> 02'50	
conjunction	2519 Jan 01 07:01	10° <del>⌢</del> 11'56	0°41'50	opposition	2524 Sep 05 15:25	13° <del>✕</del> 39'55	-1°-57'-42
minimum elong	2519 Jan 01 07:03	10° <del>⌢</del> 11'57	0°41'50	min. Earth dist.	2524 Sep 05 18:14	13° <del>✕</del> 39'23	8.77216 AU
max. Earth dist.	2519 Jan 01 03:23	10° <del>⌢</del> 10'52	11.05702 AU	direct	2524 Nov 13 14:16	10° <del>✕</del> 20'21	
morning rise	2519 Jan 17 21:53	12° <del>⌢</del> 08'43		evening set	2525 Feb 21 08:11	17° <del>✕</del> 32'54	
retrograde	2519 Apr 28 12:58	19° <del>⌢</del> 08'35					
opposition	2519 Jul 08 01:20	15° <del>⌢</del> 50'57	0°35'25	conjunction	2525 Mar 10 03:38	19° <del>✕</del> 34'59	-1°-45'-2
min. Earth dist.	2519 Jul 08 04:16	15° <del>⌢</del> 50'25	9.05689 AU	minimum elong	2525 Mar 10 03:35	19° <del>✕</del> 34'58	1°45'04
direct	2519 Sep 16 22:38	12° <del>⌢</del> 32'17		max. Earth dist.	2525 Mar 09 23:29	19° <del>✕</del> 33'43	10.72112 AU
evening set	2519 Dec 26 23:50	19° <del>⌢</del> 33'19		morning rise	2525 Mar 27 02:46	21° <del>✕</del> 38'12	
				retrograde	2525 Jul 09 23:39	29° <del>✕</del> 12'39	
conjunction	2520 Jan 12 15:20	21° <del>⌢</del> 30'19	0°15'53	opposition	2525 Sep 18 10:03	25° <del>✕</del> 48'20	-2°-19'-37
minimum elong	2520 Jan 12 15:20	21° <del>⌢</del> 30'19	0°15'52	min. Earth dist.	2525 Sep 18 12:49	25° <del>✕</del> 47'48	8.66906 AU
behind sun begin	2520 Jan 12 13:46	21° <del>⌢</del> 29'51		direct	2525 Nov 25 20:56	22° <del>✕</del> 27'59	
behind sun end	2520 Jan 12 16:55	21° <del>⌢</del> 30'47		evening set	2526 Mar 05 17:48	29° <del>✕</del> 46'50	
max. Earth dist.	2520 Jan 12 11:24	21° <del>⌢</del> 29'10	11.05083 AU		2526 Mar 07 13:24	0° <del>∇</del>	
morning rise	2520 Jan 29 06:40	23° <del>⌢</del> 27'20					
	2520 Apr 14 19:19	0° <del>≈</del>		conjunction	2526 Mar 22 15:32	1° <del>∇</del> 50'56	-2°00'-21
retrograde	2520 May 09 12:24	0° <del>≈</del> 29'38		minimum elong	2526 Mar 22 15:30	1° <del>∇</del> 50'56	2°00'22
	2520 Jun 03 11:19	30° <del>ℳ</del>		max. Earth dist.	2526 Mar 22 11:37	1° <del>∇</del> 49'44	10.61372 AU
opposition	2520 Jul 19 04:30	27° <del>⌢</del> 11'23	0°03'05	morning rise	2526 Apr 08 17:37	3° <del>∇</del> 56'22	
min. Earth dist.	2520 Jul 19 08:00	27° <del>⌢</del> 10'44	9.03926 AU	retrograde	2526 Jul 23 07:34	11° <del>∇</del> 39'48	



opposition	2526 Oct 01 09:53	8° $\Upsilon$ 14'08	-2°-35'-37	retrograde	2532 Oct 14 10:54	2° $\Theta$ 36'28	
min. Earth dist.	2526 Oct 01 12:28	8° $\Upsilon$ 13'38	8.55899 AU		2532 Dec 09 23:05	30° $\mathbb{R}$ $\Pi$	
direct	2526 Dec 08 08:24	4° $\Upsilon$ 52'51		opposition	2532 Dec 20 19:03	29° $\Pi$ 07'03	-1°-21'-20
evening set	2527 Mar 18 12:11	12° $\Upsilon$ 18'59		min. Earth dist.	2532 Dec 20 16:26	29° $\Pi$ 07'36	8.05042 AU
				direct	2533 Feb 25 07:57	25° $\Pi$ 39'23	
conjunction	2527 Apr 04 13:05	14° $\Upsilon$ 25'25	-2°-10'-18		2533 May 08 05:39	0° $\Theta$	
minimum elong	2527 Apr 04 13:04	14° $\Upsilon$ 25'25	2°10'19	evening set	2533 Jun 09 04:07	3° $\Theta$ 48'34	
max. Earth dist.	2527 Apr 04 10:15	14° $\Upsilon$ 24'32	10.50170 AU				
morning rise	2527 Apr 21 18:31	16° $\Upsilon$ 33'17		conjunction	2533 Jun 27 06:23	6° $\Theta$ 08'58	0°-50'-24
retrograde	2527 Aug 05 21:05	24° $\Upsilon$ 25'42		minimum elong	2533 Jun 27 06:25	6° $\Theta$ 08'59	0°50'25
opposition	2527 Oct 14 15:02	20° $\Upsilon$ 58'46	-2°-44'-29	max. Earth dist.	2533 Jun 27 10:20	6° $\Theta$ 10'15	10.04057 AU
min. Earth dist.	2527 Oct 14 16:49	20° $\Upsilon$ 58'25	8.44681 AU	morning rise	2533 Jul 15 10:15	8° $\Theta$ 29'51	
direct	2527 Dec 21 03:46	17° $\Upsilon$ 36'26		retrograde	2533 Oct 28 23:13	16° $\Theta$ 46'44	
evening set	2528 Mar 30 16:00	25° $\Upsilon$ 10'32		opposition	2534 Jan 03 23:14	13° $\Theta$ 17'48	0°-43'-19
				min. Earth dist.	2534 Jan 03 19:44	13° $\Theta$ 18'32	8.03821 AU
conjunction	2528 Apr 16 20:45	27° $\Upsilon$ 19'34	-2°-13'-59	direct	2534 Mar 11 16:24	9° $\Theta$ 49'24	
minimum elong	2528 Apr 16 20:45	27° $\Upsilon$ 19'34	2°14'00	evening set	2534 Jun 24 05:58	18° $\Theta$ 01'38	
max. Earth dist.	2528 Apr 16 19:38	27° $\Upsilon$ 19'13	10.39033 AU				
morning rise	2528 May 04 06:00	29° $\Upsilon$ 30'03		conjunction	2534 Jul 12 10:07	20° $\Theta$ 22'32	0°-18'-34
	2528 May 08 07:42	0° $\mathcal{B}$		minimum elong	2534 Jul 12 10:08	20° $\Theta$ 22'32	0°18'35
retrograde	2528 Aug 18 18:58	7° $\mathcal{B}$ 30'56		max. Earth dist.	2534 Jul 12 15:09	20° $\Theta$ 24'09	10.04255 AU
opposition	2528 Oct 27 01:55	4° $\mathcal{B}$ 02'54	-2°-45'-11	morning rise	2534 Jul 30 14:27	22° $\Theta$ 43'28	
min. Earth dist.	2528 Oct 27 02:12	4° $\mathcal{B}$ 02'50	8.33802 AU		2534 Oct 11 06:49	0° $\mathcal{Q}$	
direct	2529 Jan 02 05:20	0° $\mathcal{B}$ 39'28		retrograde	2534 Nov 12 09:16	0° $\mathcal{Q}$ 56'32	
evening set	2529 Apr 13 05:30	8° $\mathcal{B}$ 21'45			2534 Dec 14 16:39	30° $\mathbb{R}$ $\Theta$	
				opposition	2535 Jan 18 03:02	27° $\Theta$ 28'22	0°-2'-40
conjunction	2529 Apr 30 14:40	10° $\mathcal{B}$ 33'32	-2°-10'-46	min. Earth dist.	2535 Jan 17 22:43	27° $\Theta$ 29'15	8.05382 AU
minimum elong	2529 Apr 30 14:41	10° $\mathcal{B}$ 33'32	2°10'47	asc. node	2535 Feb 11 21:49	25° $\Theta$ 32'47	
max. Earth dist.	2529 Apr 30 14:52	10° $\mathcal{B}$ 33'35	10.28540 AU	direct	2535 Mar 26 03:11	23° $\Theta$ 59'28	
morning rise	2529 May 18 04:12	12° $\mathcal{B}$ 46'45			2535 Jun 21 09:16	0° $\mathcal{Q}$	
	2529 Jun 05 13:46	15° $\mathcal{B}$		evening set	2535 Jul 09 08:20	2° $\mathcal{Q}$ 12'41	
retrograde	2529 Sep 02 00:03	20° $\mathcal{B}$ 54'58					
opposition	2529 Nov 09 18:10	17° $\mathcal{B}$ 26'04	-2°-37'-1	conjunction	2535 Jul 27 12:34	4° $\mathcal{Q}$ 33'06	0°14'20
min. Earth dist.	2529 Nov 09 17:15	17° $\mathcal{B}$ 26'15	8.23847 AU	minimum elong	2535 Jul 27 12:33	4° $\mathcal{Q}$ 33'06	0°14'21
	2529 Dec 13 11:00	15° $\mathbb{R}$ $\mathcal{B}$		behind sun begin	2535 Jul 27 09:24	4° $\mathcal{Q}$ 32'05	
direct	2530 Jan 15 12:41	14° $\mathcal{B}$ 01'30		behind sun end	2535 Jul 27 15:41	4° $\mathcal{Q}$ 34'06	
	2530 Feb 17 04:33	15° $\mathcal{B}$		max. Earth dist.	2535 Jul 27 18:13	4° $\mathcal{Q}$ 34'55	10.07167 AU
evening set	2530 Apr 27 04:58	21° $\mathcal{B}$ 51'52		morning rise	2535 Aug 14 15:34	6° $\mathcal{Q}$ 53'08	
					2535 Nov 23 15:16	15° $\mathcal{Q}$	
conjunction	2530 May 14 18:53	24° $\mathcal{B}$ 06'22	-2°00'-20	retrograde	2535 Nov 26 14:44	15° $\mathcal{Q}$ 00'30	
minimum elong	2530 May 14 18:55	24° $\mathcal{B}$ 06'23	2°00'21		2535 Nov 29 14:04	15° $\mathbb{R}$ $\mathcal{Q}$	
max. Earth dist.	2530 May 14 19:53	24° $\mathcal{B}$ 06'41	10.19284 AU	opposition	2536 Feb 01 04:54	11° $\mathcal{Q}$ 33'18	0°37'50
morning rise	2530 Jun 01 12:55	26° $\mathcal{B}$ 22'13		min. Earth dist.	2536 Feb 01 00:18	11° $\mathcal{Q}$ 34'14	8.09563 AU
	2530 Jul 02 06:02	0° $\Pi$		direct	2536 Apr 08 14:49	8° $\mathcal{Q}$ 04'08	
retrograde	2530 Sep 16 10:14	4° $\Pi$ 36'02			2536 Jul 13 02:44	15° $\mathcal{Q}$	
opposition	2530 Nov 23 15:02	1° $\Pi$ 06'37	-2°-19'-50	evening set	2536 Jul 23 08:20	16° $\mathcal{Q}$ 16'18	
min. Earth dist.	2530 Nov 23 13:29	1° $\Pi$ 06'56	8.15400 AU				
	2530 Dec 07 12:37	30° $\mathbb{R}$ $\mathcal{B}$		conjunction	2536 Aug 10 10:56	18° $\mathcal{Q}$ 35'22	0°46'03
direct	2531 Jan 29 03:47	27° $\mathcal{B}$ 40'54		minimum elong	2536 Aug 10 10:53	18° $\mathcal{Q}$ 35'21	0°46'03
	2531 Mar 21 07:13	0° $\Pi$		max. Earth dist.	2536 Aug 10 16:25	18° $\mathcal{Q}$ 37'08	10.12521 AU
evening set	2531 May 11 13:34	5° $\Pi$ 38'48		morning rise	2536 Aug 28 11:04	20° $\mathcal{Q}$ 53'41	
				retrograde	2536 Dec 09 13:42	28° $\mathcal{Q}$ 53'57	
conjunction	2531 May 29 08:13	7° $\Pi$ 55'48	-1°-42'-52	opposition	2537 Feb 14 03:32	25° $\mathcal{Q}$ 27'54	1°15'34
minimum elong	2531 May 29 08:16	7° $\Pi$ 55'49	1°42'53	min. Earth dist.	2537 Feb 13 23:36	25° $\mathcal{Q}$ 28'42	8.15986 AU
max. Earth dist.	2531 May 29 09:58	7° $\Pi$ 56'21	10.11822 AU	direct	2537 Apr 23 00:37	21° $\mathcal{Q}$ 58'46	
morning rise	2531 Jun 16 06:30	10° $\Pi$ 13'57			2537 Aug 06 01:26	0° $\mathbb{M}$	
retrograde	2531 Sep 30 22:09	18° $\Pi$ 31'14		evening set	2537 Aug 07 03:21	0° $\mathbb{M}$ 08'06	
opposition	2531 Dec 07 15:47	15° $\Pi$ 01'39	-1°-54'-11				
min. Earth dist.	2531 Dec 07 13:46	15° $\Pi$ 02'04	8.08989 AU	conjunction	2537 Aug 25 02:52	2° $\mathbb{M}$ 25'09	1°14'42
direct	2532 Feb 12 03:13	11° $\Pi$ 34'53		minimum elong	2537 Aug 25 02:49	2° $\mathbb{M}$ 25'08	1°14'42
evening set	2532 May 25 05:48	19° $\Pi$ 39'11		max. Earth dist.	2537 Aug 25 07:13	2° $\mathbb{M}$ 26'33	10.19861 AU
				morning rise	2537 Sep 11 22:59	4° $\mathbb{M}$ 41'10	
conjunction	2532 Jun 12 04:44	21° $\Pi$ 58'13	-1°-19'-7	retrograde	2537 Dec 23 06:22	12° $\mathbb{M}$ 33'36	
minimum elong	2532 Jun 12 04:47	21° $\Pi$ 58'14	1°19'07	opposition	2538 Feb 27 22:16	9° $\mathbb{M}$ 08'51	1°48'19
max. Earth dist.	2532 Jun 12 07:28	21° $\Pi$ 59'06	10.06631 AU	min. Earth dist.	2538 Feb 27 19:33	9° $\mathbb{M}$ 09'24	8.24178 AU
morning rise	2532 Jun 30 06:27	24° $\Pi$ 18'08		direct	2538 May 07 07:18	5° $\mathbb{M}$ 40'05	
	2532 Aug 20 07:56	0° $\Theta$		evening set	2538 Aug 21 15:17	13° $\mathbb{M}$ 45'02	



conjunction	2538 Sep 08 10:35	15° $\cap$ 59'36	1°38'41	conjunction	2544 Nov 23 01:05	1° $\bowtie$ 07'51	1°53'27
minimum elong	2538 Sep 08 10:32	15° $\cap$ 59'34	1°38'41	minimum elong	2544 Nov 23 01:07	1° $\bowtie$ 07'52	1°53'27
max. Earth dist.	2538 Sep 08 13:23	16° $\cap$ 00'29	10.28748 AU	max. Earth dist.	2544 Nov 22 23:27	1° $\bowtie$ 07'22	10.88821 AU
morning rise	2538 Sep 26 01:58	18° $\cap$ 12'54		morning rise	2544 Dec 09 18:03	3° $\bowtie$ 07'01	
retrograde	2539 Jan 05 15:52	25° $\cap$ 57'10		retrograde	2545 Mar 19 07:32	10° $\bowtie$ 11'03	
opposition	2539 Mar 13 12:23	22° $\cap$ 33'46	2°14'22	opposition	2545 May 27 15:26	6° $\bowtie$ 53'03	2°09'20
min. Earth dist.	2539 Mar 13 10:24	22° $\cap$ 34'10	8.33725 AU	min. Earth dist.	2545 May 27 16:26	6° $\bowtie$ 52'52	8.92544 AU
direct	2539 May 21 09:58	19° $\cap$ 05'37		direct	2545 Aug 06 18:01	3° $\bowtie$ 31'08	
evening set	2539 Sep 04 18:21	27° $\cap$ 04'46		evening set	2545 Nov 18 00:54	10° $\bowtie$ 45'52	
conjunction	2539 Sep 22 09:02	29° $\cap$ 16'35	1°56'53	conjunction	2545 Dec 04 19:12	12° $\bowtie$ 44'39	1°36'37
minimum elong	2539 Sep 22 08:59	29° $\cap$ 16'34	1°56'53	minimum elong	2545 Dec 04 19:14	12° $\bowtie$ 44'39	1°36'37
max. Earth dist.	2539 Sep 22 10:46	29° $\cap$ 17'07	10.38782 AU	max. Earth dist.	2545 Dec 04 17:42	12° $\bowtie$ 44'12	10.95654 AU
	2539 Sep 28 03:25	0° $\underline{\Delta}$		morning rise	2545 Dec 21 10:50	14° $\bowtie$ 42'41	
morning rise	2539 Oct 09 19:26	1° $\underline{\Delta}$ 27'02		retrograde	2546 Mar 31 03:50	21° $\bowtie$ 43'46	
retrograde	2540 Jan 18 16:37	9° $\underline{\Delta}$ 03'04		opposition	2546 Jun 08 21:38	18° $\bowtie$ 26'00	1°46'11
opposition	2540 Mar 25 21:26	5° $\underline{\Delta}$ 40'55	2°32'44	min. Earth dist.	2546 Jun 08 22:32	18° $\bowtie$ 25'50	8.98467 AU
min. Earth dist.	2540 Mar 25 19:38	5° $\underline{\Delta}$ 41'16	8.44189 AU	direct	2546 Aug 19 01:56	15° $\bowtie$ 05'05	
direct	2540 Jun 03 08:39	2° $\underline{\Delta}$ 13'38		evening set	2546 Nov 29 15:21	22° $\bowtie$ 14'18	
evening set	2540 Sep 17 11:23	10° $\underline{\Delta}$ 05'49		conjunction	2546 Dec 16 08:22	24° $\bowtie$ 12'08	1°16'04
conjunction	2540 Oct 04 21:29	12° $\underline{\Delta}$ 14'50	2°08'42	minimum elong	2546 Dec 16 08:24	24° $\bowtie$ 12'09	1°16'04
minimum elong	2540 Oct 04 21:28	12° $\underline{\Delta}$ 14'49	2°08'42	max. Earth dist.	2546 Dec 16 06:55	24° $\bowtie$ 11'42	11.00667 AU
max. Earth dist.	2540 Oct 04 22:46	12° $\underline{\Delta}$ 15'13	10.49486 AU	morning rise	2547 Jan 01 23:16	26° $\bowtie$ 09'25	
morning rise	2540 Oct 22 03:05	14° $\underline{\Delta}$ 22'27			2547 Feb 07 07:02	0° $\overline{\text{C}}$	
retrograde	2541 Jan 30 11:45	21° $\underline{\Delta}$ 50'30		retrograde	2547 Apr 12 00:13	3° $\overline{\text{C}}$ 09'01	
opposition	2541 Apr 08 01:09	18° $\underline{\Delta}$ 29'31	2°42'58		2547 Jun 19 02:45	30° $\text{R}$ $\bowtie$	
min. Earth dist.	2541 Apr 07 23:19	18° $\underline{\Delta}$ 29'52	8.55043 AU	opposition	2547 Jun 21 01:44	29° $\bowtie$ 51'18	1°19'06
direct	2541 Jun 17 00:03	15° $\underline{\Delta}$ 03'13		min. Earth dist.	2547 Jun 21 03:15	29° $\bowtie$ 51'01	9.02472 AU
evening set	2541 Sep 30 18:13	22° $\underline{\Delta}$ 47'43		direct	2547 Aug 31 04:21	26° $\bowtie$ 31'16	
conjunction	2541 Oct 18 00:02	24° $\underline{\Delta}$ 54'04	2°13'57		2547 Nov 07 06:02	0° $\overline{\text{C}}$	
minimum elong	2541 Oct 18 00:01	24° $\underline{\Delta}$ 54'04	2°13'56	evening set	2547 Dec 11 02:18	3° $\overline{\text{C}}$ 36'13	
max. Earth dist.	2541 Oct 18 01:22	24° $\underline{\Delta}$ 54'29	10.60325 AU	conjunction	2547 Dec 27 18:20	5° $\overline{\text{C}}$ 33'29	0°52'39
morning rise	2541 Nov 04 01:11	26° $\underline{\Delta}$ 59'02		minimum elong	2547 Dec 27 18:22	5° $\overline{\text{C}}$ 33'29	0°52'39
	2541 Nov 30 12:26	0° $\text{M}$		max. Earth dist.	2547 Dec 27 15:47	5° $\overline{\text{C}}$ 32'43	11.03679 AU
retrograde	2542 Feb 12 01:25	4° $\text{M}$ 19'38		morning rise	2548 Jan 13 09:13	7° $\overline{\text{C}}$ 30'26	
opposition	2542 Apr 20 23:40	0° $\text{M}$ 59'40	2°45'09	retrograde	2548 Apr 22 18:16	14° $\overline{\text{C}}$ 30'00	
min. Earth dist.	2542 Apr 20 22:29	0° $\text{M}$ 59'54	8.65762 AU	opposition	2548 Jul 02 04:31	11° $\overline{\text{C}}$ 12'08	0°49'05
	2542 May 04 01:34	30° $\text{R}$ $\underline{\Delta}$		min. Earth dist.	2548 Jul 02 07:08	11° $\overline{\text{C}}$ 11'38	9.04417 AU
direct	2542 Jun 30 07:30	27° $\underline{\Delta}$ 34'29		direct	2548 Sep 11 03:07	7° $\overline{\text{C}}$ 52'48	
	2542 Aug 24 20:47	0° $\text{M}$		evening set	2548 Dec 21 11:11	14° $\overline{\text{C}}$ 54'53	
evening set	2542 Oct 13 14:55	5° $\text{M}$ 10'59		conjunction	2549 Jan 07 02:41	16° $\overline{\text{C}}$ 51'55	0°27'17
conjunction	2542 Oct 30 16:54	7° $\text{M}$ 14'55	2°12'49	minimum elong	2549 Jan 07 02:42	16° $\overline{\text{C}}$ 51'55	0°27'17
minimum elong	2542 Oct 30 16:55	7° $\text{M}$ 14'55	2°12'49	max. Earth dist.	2549 Jan 06 23:12	16° $\overline{\text{C}}$ 50'54	11.04584 AU
max. Earth dist.	2542 Oct 30 17:44	7° $\text{M}$ 15'10	10.70791 AU	morning rise	2549 Jan 23 17:58	18° $\overline{\text{C}}$ 48'53	
morning rise	2542 Nov 16 14:26	9° $\text{M}$ 17'34		retrograde	2549 May 04 15:17	25° $\overline{\text{C}}$ 50'02	
	2543 Jan 12 23:11	15° $\text{M}$		opposition	2549 Jul 14 07:16	22° $\overline{\text{C}}$ 31'45	0°17'14
retrograde	2543 Feb 24 07:44	16° $\text{M}$ 31'31		min. Earth dist.	2549 Jul 14 09:56	22° $\overline{\text{C}}$ 31'16	9.04230 AU
	2543 Apr 08 21:34	15° $\text{R}$ $\text{M}$		direct	2549 Sep 23 01:54	19° $\overline{\text{C}}$ 12'58	
opposition	2543 May 03 17:19	13° $\text{M}$ 12'25	2°39'45	evening set	2550 Jan 01 19:31	26° $\overline{\text{C}}$ 13'34	
min. Earth dist.	2543 May 03 17:16	13° $\text{M}$ 12'26	8.75866 AU	conjunction	2550 Jan 18 10:58	28° $\overline{\text{C}}$ 10'44	0°00'50
direct	2543 Jul 13 08:50	9° $\text{M}$ 48'20		minimum elong	2550 Jan 18 10:57	28° $\overline{\text{C}}$ 10'44	0°00'50
	2543 Oct 06 00:00	15° $\text{M}$		behind sun begin	2550 Jan 18 04:00	28° $\overline{\text{C}}$ 08'42	
evening set	2543 Oct 26 02:03	17° $\text{M}$ 16'58		behind sun end	2550 Jan 18 17:55	28° $\overline{\text{C}}$ 12'46	
conjunction	2543 Nov 12 00:45	19° $\text{M}$ 18'48	2°05'47	max. Earth dist.	2550 Jan 18 07:58	28° $\overline{\text{C}}$ 09'55	11.03337 AU
minimum elong	2543 Nov 12 00:46	19° $\text{M}$ 18'48	2°05'46	desc. node	2550 Jan 29 18:10	29° $\overline{\text{C}}$ 30'39	
max. Earth dist.	2543 Nov 12 00:19	19° $\text{M}$ 18'40	10.80424 AU		2550 Feb 02 22:56	0° $\approx$	
morning rise	2543 Nov 28 19:37	21° $\text{M}$ 19'30		morning rise	2550 Feb 04 02:50	0° $\approx$ 08'04	
retrograde	2544 Mar 07 09:25	28° $\text{M}$ 27'53		retrograde	2550 May 16 15:20	7° $\approx$ 12'18	
opposition	2544 May 15 06:24	25° $\text{M}$ 09'27	2°27'31	opposition	2550 Jul 26 10:52	3° $\approx$ 53'24	0°-15'-23
min. Earth dist.	2544 May 15 07:19	25° $\text{M}$ 09'17	8.84916 AU	min. Earth dist.	2550 Jul 26 12:59	3° $\approx$ 53'00	9.01913 AU
direct	2544 Jul 25 04:59	21° $\text{M}$ 46'27		direct	2550 Oct 04 21:45	0° $\approx$ 34'58	
evening set	2544 Nov 06 04:58	29° $\text{M}$ 07'45		evening set	2551 Jan 13 05:15	7° $\approx$ 35'33	
	2544 Nov 13 14:00	0° $\bowtie$					



conjunction	2551 Jan 29 20:57	9°≈33'11	0°-25'-49	evening set	2557 Mar 25 03:24	19°Υ39'01	
minimum elong	2551 Jan 29 20:56	9°≈33'11	0°25'49				
max. Earth dist.	2551 Jan 29 18:23	9°≈32'26	10.99983 AU	conjunction	2557 Apr 11 05:56	21°Υ46'22	-2°-12'-59
morning rise	2551 Feb 15 13:44	11°≈31'13		minimum elong	2557 Apr 11 05:56	21°Υ46'22	2°13'00
	2551 Mar 19 21:44	15°≈		max. Earth dist.	2557 Apr 11 03:22	21°Υ45'34	10.47240 AU
retrograde	2551 May 28 19:09	18°≈39'57		morning rise	2557 Apr 28 13:11	23°Υ55'12	
opposition	2551 Aug 07 16:09	15°≈20'13	0°-47'-39		2557 Jun 26 11:55	0°♄	
min. Earth dist.	2551 Aug 07 18:11	15°≈19'51	8.97554 AU	retrograde	2557 Aug 12 22:15	1°♄50'39	
	2551 Aug 12 05:20	15°♄≈			2557 Sep 30 05:32	30°♄Υ	
direct	2551 Oct 16 17:54	12°≈01'55		opposition	2557 Oct 21 09:47	28°Υ23'49	-2°-45'-35
	2551 Dec 17 05:26	15°≈		min. Earth dist.	2557 Oct 21 11:14	28°Υ23'32	8.41819 AU
evening set	2552 Jan 24 17:55	19°≈03'59		direct	2557 Dec 27 16:46	25°Υ01'35	
					2558 Mar 16 03:47	0°♄	
conjunction	2552 Feb 10 10:03	21°≈02'25	0°-51'-37	evening set	2558 Apr 07 11:25	2°♄38'32	
minimum elong	2552 Feb 10 10:01	21°≈02'25	0°51'37				
max. Earth dist.	2552 Feb 10 06:41	21°≈01'25	10.94647 AU	conjunction	2558 Apr 24 18:08	4°♄48'35	-2°-12'-55
morning rise	2552 Feb 27 04:15	23°≈01'29		minimum elong	2558 Apr 24 18:09	4°♄48'35	2°12'56
	2552 May 22 00:18	0°♄		max. Earth dist.	2558 Apr 24 16:00	4°♄47'54	10.36261 AU
retrograde	2552 Jun 09 04:17	0°♄16'02		morning rise	2558 May 12 05:37	7°♄00'07	
	2552 Jun 27 09:36	30°♄≈			2558 Aug 18 18:49	15°♄	
opposition	2552 Aug 19 00:18	26°≈55'21	-1°-18'-25	retrograde	2558 Aug 26 22:27	15°♄03'28	
min. Earth dist.	2552 Aug 19 02:55	26°≈54'51	8.91310 AU		2558 Sep 04 01:54	15°♄♄	
direct	2552 Oct 27 15:11	23°≈36'55		opposition	2558 Nov 03 22:36	11°♄35'37	-2°-41'-30
	2553 Jan 29 10:37	0°♄		min. Earth dist.	2558 Nov 03 23:47	11°♄35'23	8.31149 AU
evening set	2553 Feb 04 10:48	0°♄41'55		direct	2559 Jan 09 21:11	8°♄12'09	
					2559 Apr 13 11:27	15°♄	
conjunction	2553 Feb 21 03:47	2°♄41'28	-1°-15'-37	evening set	2559 Apr 21 05:16	15°♄57'19	
minimum elong	2553 Feb 21 03:45	2°♄41'27	1°15'38				
max. Earth dist.	2553 Feb 21 00:13	2°♄40'23	10.87527 AU	conjunction	2559 May 08 16:44	18°♄10'08	-2°-5'-49
morning rise	2553 Mar 09 23:43	4°♄41'53		minimum elong	2559 May 08 16:46	18°♄10'08	2°05'49
retrograde	2553 Jun 21 16:45	12°♄03'27		max. Earth dist.	2559 May 08 15:58	18°♄09'53	10.26069 AU
opposition	2553 Aug 31 12:01	8°♄41'38	-1°-46'-25	morning rise	2559 May 26 08:33	20°♄24'21	
min. Earth dist.	2553 Aug 31 14:41	8°♄41'08	8.83417 AU	retrograde	2559 Sep 10 03:55	28°♄34'14	
direct	2553 Nov 08 15:44	5°♄22'51		opposition	2559 Nov 17 16:14	25°♄05'33	-2°-28'-30
evening set	2554 Feb 16 09:26	12°♄32'09		min. Earth dist.	2559 Nov 17 16:20	25°♄05'32	8.21580 AU
				direct	2560 Jan 23 09:12	21°♄40'48	
conjunction	2554 Mar 05 03:57	14°♄33'09	-1°-36'-46	evening set	2560 May 04 08:26	29°♄33'51	
minimum elong	2554 Mar 05 03:55	14°♄33'09	1°36'48		2560 May 07 19:14	0°♄	
max. Earth dist.	2554 Mar 05 01:15	14°♄32'20	10.78888 AU	conjunction	2560 May 22 00:48	1°♄49'20	-1°-51'-35
morning rise	2554 Mar 22 01:52	16°♄35'13		minimum elong	2560 May 22 00:51	1°♄49'21	1°51'35
retrograde	2554 Jul 04 13:34	24°♄04'45		max. Earth dist.	2560 May 22 01:36	1°♄49'35	10.17300 AU
opposition	2554 Sep 13 03:52	20°♄41'39	-2°-10'-23	morning rise	2560 Jun 08 20:55	4°♄06'03	
min. Earth dist.	2554 Sep 13 05:48	20°♄41'17	8.74166 AU	retrograde	2560 Sep 23 13:15	12°♄20'35	
direct	2554 Nov 20 21:04	17°♄22'19		opposition	2560 Nov 30 14:08	8°♄51'21	-2°-6'-46
evening set	2555 Feb 28 15:04	24°♄37'06		min. Earth dist.	2560 Nov 30 12:58	8°♄51'36	8.13712 AU
				direct	2561 Feb 05 03:52	5°♄25'21	
conjunction	2555 Mar 17 11:41	26°♄39'55	-1°-54'-3	evening set	2561 May 18 19:56	13°♄25'24	
minimum elong	2555 Mar 17 11:39	26°♄39'55	1°54'05				
max. Earth dist.	2555 Mar 17 09:49	26°♄39'21	10.69045 AU	conjunction	2561 Jun 05 16:57	15°♄43'14	-1°-30'-42
morning rise	2555 Apr 03 12:05	28°♄43'58		minimum elong	2561 Jun 05 17:01	15°♄43'15	1°30'42
	2555 Apr 14 06:39	0°Υ		max. Earth dist.	2561 Jun 05 19:03	15°♄43'55	10.10504 AU
retrograde	2555 Jul 17 18:11	6°Υ22'00		morning rise	2561 Jun 23 16:54	18°♄02'03	
opposition	2555 Sep 26 00:29	2°Υ57'37	-2°-29'-3	retrograde	2561 Oct 08 01:40	26°♄18'57	
min. Earth dist.	2555 Sep 26 01:41	2°Υ57'23	8.63881 AU	opposition	2561 Dec 14 15:10	22°♄49'31	-1°-37'-14
	2555 Nov 12 09:42	30°♄♄		min. Earth dist.	2561 Dec 14 13:03	22°♄49'57	8.08034 AU
direct	2555 Dec 03 05:11	29°♄37'30		direct	2562 Feb 19 03:33	19°♄22'19	
	2555 Dec 23 19:26	0°Υ		evening set	2562 Jun 02 14:32	27°♄28'10	
evening set	2556 Mar 12 04:47	6°Υ58'52					
				conjunction	2562 Jun 20 15:22	29°♄47'47	-1°-4'-14
conjunction	2556 Mar 29 03:59	9°Υ03'48	-2°-6'-26	minimum elong	2562 Jun 20 15:25	29°♄47'48	1°04'14
minimum elong	2556 Mar 29 03:57	9°Υ03'47	2°06'27	max. Earth dist.	2562 Jun 20 18:05	29°♄48'40	10.06095 AU
max. Earth dist.	2556 Mar 29 01:52	9°Υ03'08	10.58354 AU		2562 Jun 22 04:59	0°♄	
morning rise	2556 Apr 15 07:28	11°Υ10'05		morning rise	2562 Jul 08 18:08	2°♄08'02	
retrograde	2556 Jul 30 04:43	18°Υ56'54		retrograde	2562 Oct 22 14:34	10°♄24'51	
opposition	2556 Oct 08 02:21	15°Υ31'15	-2°-41'-9	opposition	2562 Dec 28 17:56	6°♄55'34	-1°-1'-31
min. Earth dist.	2556 Oct 08 03:35	15°Υ31'00	8.52937 AU	min. Earth dist.	2562 Dec 28 15:32	6°♄56'04	8.04901 AU
direct	2556 Dec 14 19:20	12°Υ10'09					



direct	2563 Mar 05 08:33	3° <del>5</del> 27'20			2569 Mar 16 18:59	30° <del>R</del> <del>mp</del>	
evening set	2563 Jun 17 13:52	11° <del>5</del> 37'25		opposition	2569 Mar 19 23:01	29° <del>mp</del> 44'50	2°24'58
				min. Earth dist.	2569 Mar 19 20:13	29° <del>mp</del> 45'24	8.38240 AU
conjunction	2563 Jul 05 17:11	13° <del>5</del> 58'00	0°-33'-44	direct	2569 May 28 03:49	26° <del>mp</del> 16'42	
minimum elong	2563 Jul 05 17:13	13° <del>5</del> 58'01	0°33'45		2569 Aug 04 23:31	0° <del>Δ</del>	
max. Earth dist.	2563 Jul 05 20:05	13° <del>5</del> 58'57	10.04345 AU	evening set	2569 Sep 11 09:23	4° <del>Δ</del> 12'20	
morning rise	2563 Jul 23 21:22	16° <del>5</del> 18'52					
retrograde	2563 Nov 06 01:27	24° <del>5</del> 33'17		conjunction	2569 Sep 28 21:49	6° <del>Δ</del> 22'45	2°03'51
opposition	2564 Jan 11 21:16	21° <del>5</del> 04'27	0°-21'-56	minimum elong	2569 Sep 28 21:47	6° <del>Δ</del> 22'44	2°03'50
min. Earth dist.	2564 Jan 11 18:49	21° <del>5</del> 04'58	8.04509 AU	max. Earth dist.	2569 Sep 29 00:48	6° <del>Δ</del> 23'41	10.43583 AU
direct	2564 Mar 18 17:45	17° <del>5</del> 35'26		morning rise	2569 Oct 16 05:37	8° <del>Δ</del> 31'46	
evening set	2564 Jul 01 15:08	25° <del>5</del> 47'50		retrograde	2570 Jan 24 20:19	16° <del>Δ</del> 03'36	
				opposition	2570 Apr 02 05:10	12° <del>Δ</del> 41'45	2°39'04
conjunction	2564 Jul 19 19:22	28° <del>5</del> 08'30	0°-1'-13	min. Earth dist.	2570 Apr 02 03:18	12° <del>Δ</del> 42'07	8.49234 AU
minimum elong	2564 Jul 19 19:23	28° <del>5</del> 08'30	0°01'13	direct	2570 Jun 10 21:46	9° <del>Δ</del> 14'39	
behind sun begin	2564 Jul 19 12:01	28° <del>5</del> 06'08		evening set	2570 Sep 24 20:59	17° <del>Δ</del> 02'54	
behind sun end	2564 Jul 20 02:45	28° <del>5</del> 10'52					
max. Earth dist.	2564 Jul 19 22:30	28° <del>5</del> 09'28	10.05354 AU	conjunction	2570 Oct 12 04:45	19° <del>Δ</del> 10'32	2°12'12
asc. node	2564 Aug 02 12:46	29° <del>5</del> 55'00		minimum elong	2570 Oct 12 04:44	19° <del>Δ</del> 10'32	2°12'11
	2564 Aug 03 04:20	0° <del>Ω</del>		max. Earth dist.	2570 Oct 12 06:30	19° <del>Δ</del> 11'04	10.54702 AU
morning rise	2564 Aug 06 23:18	0° <del>Ω</del> 29'02		morning rise	2570 Oct 29 08:03	21° <del>Δ</del> 16'47	
retrograde	2564 Nov 19 07:39	8° <del>Ω</del> 38'59		retrograde	2571 Feb 06 11:37	28° <del>Δ</del> 40'52	
opposition	2565 Jan 24 23:31	5° <del>Ω</del> 10'56	0°18'52	opposition	2571 Apr 15 06:05	25° <del>Δ</del> 20'16	2°45'00
min. Earth dist.	2565 Jan 24 20:53	5° <del>Ω</del> 11'28	8.06868 AU	min. Earth dist.	2571 Apr 15 04:42	25° <del>Δ</del> 20'32	8.60384 AU
direct	2565 Apr 02 05:43	1° <del>Ω</del> 41'24		direct	2571 Jun 24 09:21	21° <del>Δ</del> 54'24	
evening set	2565 Jul 16 15:56	9° <del>Ω</del> 54'07		evening set	2571 Oct 07 22:25	29° <del>Δ</del> 34'47	
					2571 Oct 11 10:20	0° <del>ℳ</del>	
conjunction	2565 Aug 03 19:25	12° <del>Ω</del> 13'57	0°31'17	conjunction	2571 Oct 25 02:05	1° <del>ℳ</del> 39'50	2°14'02
minimum elong	2565 Aug 03 19:24	12° <del>Ω</del> 13'56	0°31'17	minimum elong	2571 Oct 25 02:05	1° <del>ℳ</del> 39'50	2°14'02
max. Earth dist.	2565 Aug 03 22:42	12° <del>Ω</del> 15'01	10.09029 AU	max. Earth dist.	2571 Oct 25 02:59	1° <del>ℳ</del> 40'07	10.65720 AU
morning rise	2565 Aug 21 21:20	14° <del>Ω</del> 33'15		morning rise	2571 Nov 11 01:28	3° <del>ℳ</del> 43'36	
	2565 Aug 25 10:17	15° <del>Ω</del>		retrograde	2572 Feb 18 20:33	11° <del>ℳ</del> 00'39	
retrograde	2565 Dec 03 08:00	22° <del>Ω</del> 37'02		opposition	2572 Apr 27 01:50	7° <del>ℳ</del> 41'09	2°43'06
opposition	2566 Feb 07 23:17	19° <del>Ω</del> 09'59	0°58'10	min. Earth dist.	2572 Apr 27 00:28	7° <del>ℳ</del> 41'25	8.71158 AU
min. Earth dist.	2566 Feb 07 20:16	19° <del>Ω</del> 10'36	8.11801 AU	direct	2572 Jul 06 14:39	4° <del>ℳ</del> 16'35	
direct	2566 Apr 16 16:17	15° <del>Ω</del> 40'17		evening set	2572 Oct 19 14:08	11° <del>ℳ</del> 49'02	
evening set	2566 Jul 31 13:15	23° <del>Ω</del> 51'18					
conjunction	2566 Aug 18 14:24	26° <del>Ω</del> 09'29	1°01'34	conjunction	2572 Nov 05 14:25	13° <del>ℳ</del> 51'50	2°09'43
minimum elong	2566 Aug 18 14:21	26° <del>Ω</del> 09'28	1°01'34	minimum elong	2572 Nov 05 14:26	13° <del>ℳ</del> 51'50	2°09'43
max. Earth dist.	2566 Aug 18 17:57	26° <del>Ω</del> 10'37	10.15119 AU	max. Earth dist.	2572 Nov 05 15:17	13° <del>ℳ</del> 52'06	10.76124 AU
morning rise	2566 Sep 05 12:47	28° <del>Ω</del> 26'46			2572 Nov 14 23:47	15° <del>ℳ</del>	
	2566 Sep 18 03:19	0° <del>mp</del>		morning rise	2572 Nov 22 10:34	15° <del>ℳ</del> 53'26	
retrograde	2566 Dec 17 03:45	6° <del>mp</del> 23'14		retrograde	2573 Mar 02 02:22	23° <del>ℳ</del> 04'24	
opposition	2567 Feb 21 19:44	2° <del>mp</del> 57'20	1°33'30	opposition	2573 May 09 17:05	19° <del>ℳ</del> 45'50	2°33'59
min. Earth dist.	2567 Feb 21 16:09	2° <del>mp</del> 58'04	8.18981 AU	min. Earth dist.	2573 May 09 16:06	19° <del>ℳ</del> 46'01	8.81065 AU
	2567 Apr 06 08:45	30° <del>R</del> <del>Ω</del>		direct	2573 Jul 19 12:56	16° <del>ℳ</del> 22'35	
direct	2567 May 01 00:09	29° <del>Ω</del> 27'51		evening set	2573 Oct 31 21:10	23° <del>ℳ</del> 47'23	
	2567 May 25 14:14	0° <del>mp</del>					
evening set	2567 Aug 15 04:21	7° <del>mp</del> 35'13		conjunction	2573 Nov 17 18:36	25° <del>ℳ</del> 48'17	1°59'48
				minimum elong	2573 Nov 17 18:38	25° <del>ℳ</del> 48'17	1°59'48
conjunction	2567 Sep 02 01:55	9° <del>mp</del> 51'08	1°27'55	max. Earth dist.	2573 Nov 17 19:13	25° <del>ℳ</del> 48'28	10.85451 AU
minimum elong	2567 Sep 02 01:51	9° <del>mp</del> 51'06	1°27'54	morning rise	2573 Dec 04 12:17	27° <del>ℳ</del> 48'07	
max. Earth dist.	2567 Sep 02 05:57	9° <del>mp</del> 52'25	10.23238 AU		2573 Dec 23 22:08	0° <del>Δ</del>	
morning rise	2567 Sep 19 19:42	12° <del>mp</del> 05'52		retrograde	2574 Mar 14 03:04	4° <del>Δ</del> 54'07	
retrograde	2567 Dec 30 17:02	19° <del>mp</del> 54'18		opposition	2574 May 22 04:25	1° <del>Δ</del> 36'16	2°18'28
opposition	2568 Mar 06 11:53	16° <del>mp</del> 29'41	2°02'53	min. Earth dist.	2574 May 22 04:32	1° <del>Δ</del> 36'15	8.89692 AU
min. Earth dist.	2568 Mar 06 08:19	16° <del>mp</del> 30'24	8.27968 AU		2574 Jun 13 11:39	30° <del>R</del> <del>ℳ</del>	
direct	2568 May 14 04:04	13° <del>mp</del> 00'44		direct	2574 Aug 01 03:44	28° <del>ℳ</del> 14'16	
evening set	2568 Aug 28 11:31	21° <del>mp</del> 02'51			2574 Sep 17 14:43	0° <del>Δ</del>	
				evening set	2574 Nov 12 20:45	5° <del>Δ</del> 32'05	
conjunction	2568 Sep 15 04:42	23° <del>mp</del> 16'06	1°48'57				
minimum elong	2568 Sep 15 04:39	23° <del>mp</del> 16'05	1°48'57	conjunction	2574 Nov 29 15:53	7° <del>Δ</del> 31'25	1°44'59
max. Earth dist.	2568 Sep 15 08:37	23° <del>mp</del> 17'20	10.32908 AU	minimum elong	2574 Nov 29 15:55	7° <del>Δ</del> 31'26	1°44'59
morning rise	2568 Oct 02 17:28	25° <del>mp</del> 28'00		max. Earth dist.	2574 Nov 29 15:07	7° <del>Δ</del> 31'12	10.93325 AU
	2568 Nov 12 05:11	0° <del>Δ</del>		morning rise	2574 Dec 16 08:01	9° <del>Δ</del> 29'55	
retrograde	2569 Jan 11 22:19	3° <del>Δ</del> 08'04		retrograde	2575 Mar 25 23:49	16° <del>Δ</del> 32'15	



opposition	2575 Jun 03 12:21	13°♌14'52	1°57'32	max. Earth dist.	2581 Feb 04 06:22	15°♍55'21	10.96824 AU
min. Earth dist.	2575 Jun 03 13:41	13°♌14'37	8.96693 AU	morning rise	2581 Feb 21 04:21	17°♍55'17	
direct	2575 Aug 13 14:28	9°♌53'56		retrograde	2581 Jun 03 19:18	25°♍07'22	
evening set	2575 Nov 24 14:06	17°♌05'42		opposition	2581 Aug 13 15:54	21°♍47'06	-1°-4'-22
				min. Earth dist.	2581 Aug 13 19:13	21°♍46'28	8.93654 AU
conjunction	2575 Dec 11 07:34	19°♌03'54	1°26'04	direct	2581 Oct 22 13:00	18°♍28'36	
minimum elong	2575 Dec 11 07:36	19°♌03'55	1°26'04	evening set	2582 Jan 30 09:47	25°♍32'31	
max. Earth dist.	2575 Dec 11 05:23	19°♌03'15	10.99413 AU				
morning rise	2575 Dec 27 22:54	21°♌01'28		conjunction	2582 Feb 16 02:31	27°♍31'38	-1°-4'-44
retrograde	2576 Apr 05 19:50	28°♌01'33		minimum elong	2582 Feb 16 02:29	27°♍31'38	1°04'45
opposition	2576 Jun 14 17:36	24°♌44'20	1°32'10	max. Earth dist.	2582 Feb 15 22:44	27°♍30'30	10.90032 AU
min. Earth dist.	2576 Jun 14 19:27	24°♌44'00	9.01743 AU	morning rise	2582 Mar 04 21:29	29°♍31'30	
direct	2576 Aug 24 20:42	21°♌24'21			2582 Mar 08 23:21	0°♋	
evening set	2576 Dec 05 02:57	28°♌31'13		retrograde	2582 Jun 16 06:40	6°♋50'10	
	2576 Dec 17 18:22	0°♊		opposition	2582 Aug 26 02:09	3°♋28'36	-1°-33'-51
conjunction	2576 Dec 21 19:24	0°♊28'40	1°03'54	min. Earth dist.	2582 Aug 26 04:59	3°♋28'04	8.86032 AU
minimum elong	2576 Dec 21 19:25	0°♊28'41	1°03'53	direct	2582 Nov 03 11:26	0°♋09'41	
max. Earth dist.	2576 Dec 21 16:47	0°♊27'54	11.03410 AU	evening set	2583 Feb 11 05:55	7°♋17'21	
morning rise	2577 Jan 07 10:16	2°♊25'42		conjunction	2583 Feb 27 23:44	9°♋17'49	-1°-27'-23
retrograde	2577 Apr 17 15:14	9°♊25'06		minimum elong	2583 Feb 27 23:42	9°♋17'48	1°27'24
opposition	2577 Jun 26 21:12	6°♊07'47	1°03'24	max. Earth dist.	2583 Feb 27 19:40	9°♋16'35	10.81613 AU
min. Earth dist.	2577 Jun 26 23:12	6°♊07'25	9.04586 AU	morning rise	2583 Mar 16 20:40	11°♋19'14	
direct	2577 Sep 05 22:21	2°♊48'35		retrograde	2583 Jun 29 00:38	18°♋45'30	
evening set	2577 Dec 16 13:02	9°♊51'58		opposition	2583 Sep 07 16:07	15°♋22'35	-1°-59'-54
				min. Earth dist.	2583 Sep 07 19:05	15°♋22'01	8.76946 AU
conjunction	2578 Jan 02 04:51	11°♊49'03	0°39'20	direct	2583 Nov 15 14:14	12°♋03'01	
minimum elong	2578 Jan 02 04:52	11°♊49'03	0°39'19	evening set	2584 Feb 23 08:22	19°♋15'47	
max. Earth dist.	2578 Jan 02 01:58	11°♊48'12	11.05124 AU				
morning rise	2578 Jan 18 19:44	13°♊45'56		conjunction	2584 Mar 11 03:51	21°♋17'54	-1°-46'-37
retrograde	2578 Apr 29 13:08	20°♊46'16		minimum elong	2584 Mar 11 03:48	21°♋17'54	1°46'38
opposition	2578 Jul 09 00:24	17°♊28'37	0°32'17	max. Earth dist.	2584 Mar 10 23:35	21°♋16'36	10.71898 AU
min. Earth dist.	2578 Jul 09 03:09	17°♊28'07	9.05123 AU	morning rise	2584 Mar 28 03:12	23°♋21'12	
direct	2578 Sep 17 20:58	14°♊09'59			2584 Jun 07 05:45	0°♌	
evening set	2578 Dec 27 21:57	21°♊11'18		retrograde	2584 Jul 11 00:35	0°♌55'53	
					2584 Aug 14 04:56	30°♌	
conjunction	2579 Jan 13 13:23	23°♊08'23	0°13'16	opposition	2584 Sep 19 10:50	27°♋31'34	-2°-21'-15
minimum elong	2579 Jan 13 13:24	23°♊08'24	0°13'16	min. Earth dist.	2584 Sep 19 13:50	27°♋30'59	8.66752 AU
behind sun begin	2579 Jan 13 09:13	23°♊07'11		direct	2584 Nov 26 20:50	24°♋11'13	
behind sun end	2579 Jan 13 17:34	23°♊09'36			2585 Feb 22 00:14	0°♌	
max. Earth dist.	2579 Jan 13 09:13	23°♊07'10	11.04535 AU	evening set	2585 Mar 06 18:09	1°♌30'11	
morning rise	2579 Jan 30 04:53	25°♊05'32					
	2579 Mar 20 03:54	0°♍		conjunction	2585 Mar 23 16:04	3°♌34'19	-2°-1'-25
retrograde	2579 May 11 11:02	2°♍08'20		minimum elong	2585 Mar 23 16:02	3°♌34'18	2°01'26
	2579 Jul 05 00:06	30°♌		max. Earth dist.	2585 Mar 23 12:59	3°♌33'22	10.61275 AU
desc. node	2579 Jul 19 14:16	28°♌57'02		morning rise	2585 Apr 09 18:14	5°♌39'47	
opposition	2579 Jul 21 04:01	28°♌50'05	0°00'-7	retrograde	2585 Jul 24 07:03	13°♌23'20	
min. Earth dist.	2579 Jul 21 07:48	28°♌49'23	9.03397 AU	opposition	2585 Oct 02 10:38	9°♌57'38	-2°-36'-34
direct	2579 Sep 29 16:44	25°♌31'44		min. Earth dist.	2585 Oct 02 12:42	9°♌57'13	8.55871 AU
	2579 Dec 16 06:47	0°♍		direct	2585 Dec 09 09:58	6°♌36'20	
evening set	2580 Jan 08 07:27	2°♍32'29		evening set	2586 Mar 19 12:40	14°♌02'28	
conjunction	2580 Jan 24 22:53	4°♍29'54	0°-13'-27	conjunction	2586 Apr 05 13:47	16°♌08'57	-2°-10'-47
minimum elong	2580 Jan 24 22:52	4°♍29'54	0°13'28	minimum elong	2586 Apr 05 13:46	16°♌08'57	2°10'48
behind sun begin	2580 Jan 24 18:50	4°♍28'43		max. Earth dist.	2586 Apr 05 12:05	16°♌08'25	10.50202 AU
behind sun end	2580 Jan 25 02:55	4°♍31'05		morning rise	2586 Apr 22 19:16	18°♌16'49	
max. Earth dist.	2580 Jan 24 17:48	4°♍28'25	11.01724 AU	retrograde	2586 Aug 06 22:14	26°♌09'13	
morning rise	2580 Feb 10 15:20	6°♍27'38		opposition	2586 Oct 15 15:40	22°♌42'13	-2°-44'-42
retrograde	2580 May 22 12:09	13°♍34'23		min. Earth dist.	2586 Oct 15 16:33	22°♌42'03	8.44784 AU
opposition	2580 Aug 01 08:46	10°♍15'14	0°-32'-43	direct	2586 Dec 22 04:28	19°♌19'53	
min. Earth dist.	2580 Aug 01 12:54	10°♍14'28	8.99518 AU	evening set	2587 Apr 01 16:35	26°♌53'50	
direct	2580 Oct 10 15:07	6°♍56'54					
evening set	2581 Jan 18 18:54	13°♍58'33		conjunction	2587 Apr 18 21:31	29°♌02'53	-2°-13'-51
	2581 Jan 27 12:08	15°♍		minimum elong	2587 Apr 18 21:31	29°♌02'53	2°13'52
				max. Earth dist.	2587 Apr 18 20:45	29°♌02'39	10.39195 AU
conjunction	2581 Feb 04 10:48	15°♍56'40	0°-39'-45		2587 Apr 26 11:09	0°♎	
minimum elong	2581 Feb 04 10:47	15°♍56'39	0°39'46	morning rise	2587 May 06 06:54	1°♎13'23	



retrograde	2587 Aug 20 20:59	9°♄14'01			2593 Sep 20 06:40	0°♄	
opposition	2587 Oct 29 02:16	5°♄45'57	-2°-44'-37	retrograde	2593 Nov 13 07:06	2°♄32'54	
min. Earth dist.	2587 Oct 29 02:09	5°♄45'58	8.34026 AU		2594 Jan 07 17:33	30°♄♂	
direct	2588 Jan 04 04:25	2°♄22'29		asc. node	2594 Jan 14 21:17	29°♄25'13	
evening set	2588 Apr 14 06:04	10°♄04'32		opposition	2594 Jan 19 00:35	29°♄04'46	0°00'27
				min. Earth dist.	2594 Jan 18 20:18	29°♄05'39	8.05804 AU
conjunction	2588 May 01 15:18	12°♄16'17	-2°-10'-1	direct	2594 Mar 27 01:16	25°♄35'52	
minimum elong	2588 May 01 15:20	12°♄16'17	2°10'02		2594 Jun 08 04:03	0°♄	
max. Earth dist.	2588 May 01 14:58	12°♄16'10	10.28820 AU	evening set	2594 Jul 10 06:49	3°♄48'51	
morning rise	2588 May 19 05:04	14°♄29'29					
	2588 May 23 07:38	15°♄		conjunction	2594 Jul 28 10:56	6°♄09'10	0°16'47
retrograde	2588 Sep 03 00:47	22°♄37'17		minimum elong	2594 Jul 28 10:55	6°♄09'10	0°16'48
opposition	2588 Nov 10 18:10	19°♄08'22	-2°-35'-42	max. Earth dist.	2594 Jul 28 16:23	6°♄10'55	10.07575 AU
min. Earth dist.	2588 Nov 10 17:35	19°♄08'29	8.24177 AU	morning rise	2594 Aug 15 13:46	8°♄29'05	
direct	2589 Jan 16 12:42	15°♄43'43			2594 Oct 16 07:25	15°♄	
evening set	2589 Apr 28 05:15	23°♄33'48		retrograde	2594 Nov 27 12:07	16°♄36'02	
					2595 Jan 09 06:24	15°♄♄	
conjunction	2589 May 15 19:15	25°♄48'14	-1°-59'00	opposition	2595 Feb 02 02:11	13°♄08'55	0°40'47
minimum elong	2589 May 15 19:18	25°♄48'15	1°59'01	min. Earth dist.	2595 Feb 01 22:09	13°♄09'44	8.09965 AU
max. Earth dist.	2589 May 15 19:34	25°♄48'21	10.19665 AU	direct	2595 Apr 10 11:45	9°♄39'46	
morning rise	2589 Jun 02 13:33	28°♄04'03			2595 Jul 01 13:34	15°♄	
	2589 Jun 18 08:25	0°♄♄		evening set	2595 Jul 25 06:35	17°♄51'46	
retrograde	2589 Sep 17 08:47	6°♄17'18					
opposition	2589 Nov 24 14:38	2°♄47'53	-2°-17'-50	conjunction	2595 Aug 12 08:55	20°♄10'44	0°48'18
min. Earth dist.	2589 Nov 24 13:41	2°♄48'04	8.15817 AU	minimum elong	2595 Aug 12 08:53	20°♄10'43	0°48'19
	2590 Jan 03 22:05	30°♄♂		max. Earth dist.	2595 Aug 12 13:43	20°♄12'16	10.12926 AU
direct	2590 Jan 30 04:52	29°♄22'05		morning rise	2595 Aug 30 08:54	22°♄28'56	
	2590 Feb 25 06:49	0°♄♄			2595 Nov 18 16:19	0°♄♄	
evening set	2590 May 12 13:25	7°♄19'35		retrograde	2595 Dec 11 11:21	0°♄28'50	
					2596 Jan 03 07:01	30°♄♄	
conjunction	2590 May 30 08:16	9°♄36'32	-1°-41'-2	opposition	2596 Feb 16 00:43	27°♄02'52	1°18'11
minimum elong	2590 May 30 08:19	9°♄36'33	1°41'03	min. Earth dist.	2596 Feb 15 21:29	27°♄03'32	8.16414 AU
max. Earth dist.	2590 May 30 09:42	9°♄37'00	10.12274 AU	direct	2596 Apr 23 21:47	23°♄33'45	
morning rise	2590 Jun 17 06:45	11°♄54'38			2596 Jul 25 00:51	0°♄♄	
retrograde	2590 Oct 01 20:01	20°♄11'16		evening set	2596 Aug 08 01:08	1°♄42'52	
opposition	2590 Dec 08 14:48	16°♄41'40	-1°-51'-38				
min. Earth dist.	2590 Dec 08 13:07	16°♄42'01	8.09457 AU	conjunction	2596 Aug 26 00:18	3°♄59'47	1°16'37
direct	2591 Feb 13 03:05	13°♄14'49		minimum elong	2596 Aug 26 00:15	3°♄59'46	1°16'37
evening set	2591 May 27 05:21	21°♄18'41		max. Earth dist.	2596 Aug 26 03:42	4°♄00'53	10.20302 AU
				morning rise	2596 Sep 12 20:18	6°♄15'40	
conjunction	2591 Jun 14 04:30	23°♄37'41	-1°-16'-54	retrograde	2596 Dec 24 02:49	14°♄07'44	
minimum elong	2591 Jun 14 04:34	23°♄37'42	1°16'55	opposition	2597 Feb 28 19:10	10°♄43'03	1°50'26
max. Earth dist.	2591 Jun 14 07:24	23°♄38'37	10.07111 AU	min. Earth dist.	2597 Feb 28 16:47	10°♄43'32	8.24627 AU
morning rise	2591 Jul 02 06:16	25°♄57'30		direct	2597 May 08 05:18	7°♄14'18	
	2591 Aug 05 10:01	0°♄♄		evening set	2597 Aug 22 12:37	15°♄19'01	
retrograde	2591 Oct 16 09:04	4°♄15'10					
opposition	2591 Dec 22 17:25	0°♄45'45	-1°-18'-24	conjunction	2597 Sep 09 07:41	17°♄33'26	1°40'10
min. Earth dist.	2591 Dec 22 14:38	0°♄46'19	8.05519 AU	minimum elong	2597 Sep 09 07:38	17°♄33'25	1°40'10
	2592 Jan 01 01:16	30°♄♄		max. Earth dist.	2597 Sep 09 09:45	17°♄34'06	10.29171 AU
direct	2592 Feb 27 06:58	27°♄18'01		morning rise	2597 Sep 26 22:54	19°♄46'38	
	2592 Apr 22 18:10	0°♄♄		retrograde	2598 Jan 06 10:52	27°♄30'37	
evening set	2592 Jun 10 03:14	5°♄26'48		opposition	2598 Mar 14 08:56	24°♄07'16	2°15'55
				min. Earth dist.	2598 Mar 14 06:49	24°♄07'41	8.34105 AU
conjunction	2592 Jun 28 05:39	7°♄47'07	0°-47'-58	direct	2598 May 22 08:35	20°♄39'11	
minimum elong	2592 Jun 28 05:41	7°♄47'08	0°47'58	evening set	2598 Sep 05 15:19	28°♄38'09	
max. Earth dist.	2592 Jun 28 10:05	7°♄48'33	10.04528 AU		2598 Sep 16 14:55	0°♄♄	
morning rise	2592 Jul 16 09:25	10°♄07'54					
retrograde	2592 Oct 29 21:27	18°♄24'10		conjunction	2598 Sep 23 05:51	0°♄49'52	1°57'53
opposition	2593 Jan 04 21:09	14°♄55'14	0°-40'-11	minimum elong	2598 Sep 23 05:48	0°♄49'51	1°57'53
min. Earth dist.	2593 Jan 04 17:15	14°♄56'02	8.04278 AU	max. Earth dist.	2598 Sep 23 07:31	0°♄50'23	10.39093 AU
direct	2593 Mar 12 14:54	11°♄26'49		morning rise	2598 Oct 10 16:00	3°♄00'13	
evening set	2593 Jun 25 04:38	19°♄38'42		retrograde	2599 Jan 19 13:23	10°♄36'08	
				opposition	2599 Mar 27 17:56	7°♄14'03	2°33'39
conjunction	2593 Jul 13 08:50	21°♄59'30	0°-16'-3	min. Earth dist.	2599 Mar 27 15:54	7°♄14'27	8.44419 AU
minimum elong	2593 Jul 13 08:50	21°♄59'30	0°16'03	direct	2599 Jun 05 05:10	3°♄46'50	
max. Earth dist.	2593 Jul 13 14:11	22°♄01'14	10.04696 AU	evening set	2599 Sep 19 08:03	11°♄38'56	
morning rise	2593 Jul 31 13:00	24°♄20'20					



conjunction	2599 Oct 06 18:03	13° $\overline{47}$ '54	2°09'11
minimum elong	2599 Oct 06 18:01	13° $\overline{47}$ '54	2°09'10
max. Earth dist.	2599 Oct 06 19:41	13° $\overline{48}$ '25	10.49627 AU
morning rise	2599 Oct 23 23:20	15° $\overline{55}$ '28	
retrograde	2600 Feb 01 09:30	23° $\overline{23}$ '33	
opposition	2600 Apr 09 21:47	20° $\overline{02}$ '37	2°43'14
min. Earth dist.	2600 Apr 09 20:18	20° $\overline{02}$ '55	8.55093 AU
direct	2600 Jun 18 19:16	16° $\overline{36}$ '25	
evening set	2600 Oct 02 14:49	24° $\overline{20}$ '57	
conjunction	2600 Oct 19 20:30	26° $\overline{27}$ '18	2°13'54
minimum elong	2600 Oct 19 20:30	26° $\overline{27}$ '18	2°13'53
max. Earth dist.	2600 Oct 19 21:39	26° $\overline{27}$ '39	10.60280 AU
morning rise	2600 Nov 05 21:30	28° $\overline{32}$ '16	
	2600 Nov 18 07:03	0° $\overline{00}$ '00	



retrograde	2600 Feb 01 09:30	23° <del>2</del> 23'33		conjunction	2605 Dec 18 06:10	25° <del>2</del> 49'37	1°13'49
opposition	2600 Apr 09 21:47	20° <del>2</del> 02'37	2°43'14	minimum elong	2605 Dec 18 06:12	25° <del>2</del> 49'38	1°13'49
min. Earth dist.	2600 Apr 09 20:18	20° <del>2</del> 02'55	8.55093 AU	max. Earth dist.	2605 Dec 18 04:11	25° <del>2</del> 49'02	10.99826 AU
direct	2600 Jun 18 19:16	16° <del>2</del> 36'25		morning rise	2606 Jan 03 21:13	27° <del>2</del> 47'03	
evening set	2600 Oct 02 14:49	24° <del>2</del> 20'57			2606 Jan 23 18:16	0° <del>2</del>	
				retrograde	2606 Apr 13 21:52	4° <del>2</del> 47'12	
conjunction	2600 Oct 19 20:30	26° <del>2</del> 27'18	2°13'54	opposition	2606 Jun 23 00:45	1° <del>2</del> 29'24	1°16'12
minimum elong	2600 Oct 19 20:30	26° <del>2</del> 27'18	2°13'53	min. Earth dist.	2606 Jun 23 02:53	1° <del>2</del> 29'00	9.01583 AU
max. Earth dist.	2600 Oct 19 21:39	26° <del>2</del> 27'39	10.60280 AU		2606 Jul 13 21:34	30° <del>2</del> 47'	
morning rise	2600 Nov 05 21:30	28° <del>2</del> 32'16		direct	2606 Sep 02 01:53	28° <del>2</del> 09'17	
	2600 Nov 18 07:03	0° <del>2</del>			2606 Oct 20 16:26	0° <del>2</del>	
retrograde	2601 Feb 13 21:38	5° <del>2</del> 53'01		evening set	2606 Dec 13 00:31	5° <del>2</del> 14'39	
opposition	2601 Apr 22 20:28	2° <del>2</del> 33'08	2°44'46				
min. Earth dist.	2601 Apr 22 20:15	2° <del>2</del> 33'10	8.65627 AU	conjunction	2606 Dec 29 16:33	7° <del>2</del> 12'03	0°50'10
	2601 May 30 08:08	30° <del>2</del> 47'		minimum elong	2606 Dec 29 16:35	7° <del>2</del> 12'03	0°50'10
direct	2601 Jul 02 03:59	29° <del>2</del> 07'59		max. Earth dist.	2606 Dec 29 13:34	7° <del>2</del> 11'10	11.02755 AU
	2601 Aug 03 17:36	0° <del>2</del>		morning rise	2607 Jan 15 07:38	9° <del>2</del> 09'09	
evening set	2601 Oct 15 11:39	6° <del>2</del> 44'41		retrograde	2607 Apr 25 17:43	16° <del>2</del> 09'21	
				opposition	2607 Jul 05 04:03	12° <del>2</del> 51'20	0°45'56
conjunction	2601 Nov 01 13:26	8° <del>2</del> 48'37	2°12'15	min. Earth dist.	2607 Jul 05 06:27	12° <del>2</del> 50'53	9.03462 AU
minimum elong	2601 Nov 01 13:27	8° <del>2</del> 48'37	2°12'15	direct	2607 Sep 14 03:24	9° <del>2</del> 31'54	
max. Earth dist.	2601 Nov 01 13:11	8° <del>2</del> 48'33	10.70560 AU	evening set	2607 Dec 24 09:45	16° <del>2</del> 34'24	
morning rise	2601 Nov 18 10:59	10° <del>2</del> 51'19					
	2601 Dec 26 16:07	15° <del>2</del>		conjunction	2608 Jan 10 01:25	18° <del>2</del> 31'36	0°24'38
retrograde	2602 Feb 26 04:42	18° <del>2</del> 05'33		minimum elong	2608 Jan 10 01:26	18° <del>2</del> 31'36	0°24'37
	2602 May 02 15:38	15° <del>2</del> 47'		max. Earth dist.	2608 Jan 09 22:41	18° <del>2</del> 30'48	11.03604 AU
opposition	2602 May 05 14:25	14° <del>2</del> 46'31	2°38'45	morning rise	2608 Jan 26 16:46	20° <del>2</del> 28'43	
min. Earth dist.	2602 May 05 15:00	14° <del>2</del> 46'24	8.75547 AU	retrograde	2608 May 06 15:42	27° <del>2</del> 30'30	
direct	2602 Jul 15 06:35	11° <del>2</del> 22'28		opposition	2608 Jul 16 07:12	24° <del>2</del> 12'03	0°13'56
	2602 Sep 22 12:23	15° <del>2</del>		min. Earth dist.	2608 Jul 16 09:02	24° <del>2</del> 11'43	9.03232 AU
evening set	2602 Oct 27 22:54	18° <del>2</del> 51'22		direct	2608 Sep 25 01:03	20° <del>2</del> 53'10	
				desc. node	2608 Dec 24 09:54	26° <del>2</del> 43'31	
conjunction	2602 Nov 13 21:29	20° <del>2</del> 53'16	2°04'43	evening set	2609 Jan 03 18:38	27° <del>2</del> 54'12	
minimum elong	2602 Nov 13 21:31	20° <del>2</del> 53'16	2°04'43				
max. Earth dist.	2602 Nov 13 20:17	20° <del>2</del> 52'54	10.80017 AU	conjunction	2609 Jan 20 10:13	29° <del>2</del> 51'31	0°-1'-57
morning rise	2602 Nov 30 16:26	22° <del>2</del> 54'03		minimum elong	2609 Jan 20 10:13	29° <del>2</del> 51'31	0°01'58
	2603 Mar 02 21:31	0° <del>2</del> 47'		behind sun begin	2609 Jan 20 03:14	29° <del>2</del> 49'29	
retrograde	2603 Mar 10 06:29	0° <del>2</del> 42'49		behind sun end	2609 Jan 20 17:11	29° <del>2</del> 53'33	
	2603 Mar 17 16:27	30° <del>2</del> 47'		max. Earth dist.	2609 Jan 20 07:56	29° <del>2</del> 50'54	11.02326 AU
opposition	2603 May 18 03:52	26° <del>2</del> 44'23	2°25'57		2609 Jan 21 14:56	0° <del>2</del>	
min. Earth dist.	2603 May 18 04:32	26° <del>2</del> 44'15	8.84422 AU	morning rise	2609 Feb 06 02:07	1° <del>2</del> 49'00	
direct	2603 Jul 28 01:54	23° <del>2</del> 21'26		retrograde	2609 May 18 16:22	8° <del>2</del> 53'52	
	2603 Nov 02 21:39	0° <del>2</del> 47'		opposition	2609 Jul 28 11:17	5° <del>2</del> 34'48	0°-18'-42
evening set	2603 Nov 09 01:57	0° <del>2</del> 43'01		min. Earth dist.	2609 Jul 28 13:03	5° <del>2</del> 34'29	9.00901 AU
				direct	2609 Oct 06 21:23	2° <del>2</del> 16'16	
conjunction	2603 Nov 25 22:11	2° <del>2</del> 43'14	1°51'56	evening set	2610 Jan 15 04:58	9° <del>2</del> 17'18	
minimum elong	2603 Nov 25 22:13	2° <del>2</del> 43'15	1°51'57				
max. Earth dist.	2603 Nov 25 20:56	2° <del>2</del> 42'52	10.88252 AU	conjunction	2610 Jan 31 20:37	11° <del>2</del> 15'05	0°-28'-29
morning rise	2603 Dec 12 15:09	4° <del>2</del> 42'30		minimum elong	2610 Jan 31 20:36	11° <del>2</del> 15'04	0°28'29
retrograde	2604 Mar 21 05:29	11° <del>2</del> 47'01		max. Earth dist.	2610 Jan 31 17:46	11° <del>2</del> 14'14	10.98978 AU
opposition	2604 May 29 13:20	8° <del>2</del> 28'59	2°07'15	morning rise	2610 Feb 17 13:35	13° <del>2</del> 13'16	
min. Earth dist.	2604 May 29 13:55	8° <del>2</del> 28'52	8.91894 AU		2610 Mar 05 08:02	15° <del>2</del>	
direct	2604 Aug 08 16:02	5° <del>2</del> 07'04		retrograde	2610 May 30 20:36	20° <del>2</del> 22'38	
evening set	2604 Nov 19 22:14	12° <del>2</del> 22'10		opposition	2610 Aug 09 17:13	17° <del>2</del> 02'46	0°-50'-52
				min. Earth dist.	2610 Aug 09 19:33	17° <del>2</del> 02'20	8.96568 AU
conjunction	2604 Dec 06 16:40	14° <del>2</del> 21'04	1°34'42		2610 Sep 08 10:09	15° <del>2</del> 47'	
minimum elong	2604 Dec 06 16:42	14° <del>2</del> 21'04	1°34'42	direct	2610 Oct 18 17:31	13° <del>2</del> 44'20	
max. Earth dist.	2604 Dec 06 15:36	14° <del>2</del> 20'45	10.94936 AU		2610 Nov 26 23:42	15° <del>2</del>	
morning rise	2604 Dec 23 08:18	16° <del>2</del> 19'12		evening set	2611 Jan 26 18:03	20° <del>2</del> 46'52	
retrograde	2605 Apr 02 03:43	23° <del>2</del> 20'49					
opposition	2605 Jun 10 20:03	20° <del>2</del> 03'00	1°43'39	conjunction	2611 Feb 12 10:12	22° <del>2</del> 45'25	0°-54'-8
min. Earth dist.	2605 Jun 10 21:20	20° <del>2</del> 02'45	8.97681 AU	minimum elong	2611 Feb 12 10:11	22° <del>2</del> 45'25	0°54'08
direct	2605 Aug 20 23:23	16° <del>2</del> 42'03		max. Earth dist.	2611 Feb 12 06:48	22° <del>2</del> 44'24	10.93688 AU
evening set	2605 Dec 01 13:11	23° <del>2</del> 51'39		morning rise	2611 Mar 01 04:37	24° <del>2</del> 44'39	
					2611 Apr 22 16:53	0° <del>2</del> 47'	



retrograde	2611 Jun 12 04:17	1°♄59'51		retrograde	2617 Aug 29 00:20	16°♄51'17	
	2611 Aug 03 11:06	30°♄			2617 Oct 16 01:12	15°♄	
opposition	2611 Aug 22 01:46	28°♄38'59	-1°-21'-21	opposition	2617 Nov 06 00:53	13°♄23'27	-2°-40'-25
min. Earth dist.	2611 Aug 22 04:17	28°♄38'31	8.90387 AU	min. Earth dist.	2617 Nov 06 01:19	13°♄23'21	8.31362 AU
direct	2611 Oct 30 15:54	25°♄20'26		direct	2618 Jan 12 00:13	10°♄00'01	
	2612 Jan 16 20:45	0°♄			2618 Mar 31 06:39	15°♄	
evening set	2612 Feb 07 11:29	2°♄25'55		evening set	2618 Apr 23 07:47	17°♄45'05	
conjunction	2612 Feb 24 04:39	4°♄25'36	-1°-17'-51	conjunction	2618 May 10 19:34	19°♄57'55	-2°-4'-37
minimum elong	2612 Feb 24 04:37	4°♄25'35	1°17'52	minimum elong	2618 May 10 19:37	19°♄57'56	2°04'38
max. Earth dist.	2612 Feb 24 02:00	4°♄24'48	10.86638 AU	max. Earth dist.	2618 May 10 19:46	19°♄57'59	10.26371 AU
morning rise	2612 Mar 12 00:38	6°♄26'08		morning rise	2618 May 28 11:32	22°♄12'09	
retrograde	2612 Jun 23 19:16	13°♄48'21			2618 Aug 23 00:05	0°♄	
opposition	2612 Sep 02 13:41	10°♄26'22	-1°-48'-58	retrograde	2618 Sep 12 05:49	0°♄21'43	
min. Earth dist.	2612 Sep 02 15:30	10°♄26'01	8.82581 AU		2618 Oct 02 13:50	30°♄	
direct	2612 Nov 10 17:57	7°♄07'30		opposition	2618 Nov 19 18:12	26°♄53'06	-2°-26'-38
evening set	2613 Feb 18 10:38	14°♄17'14		min. Earth dist.	2618 Nov 19 17:34	26°♄53'14	8.21962 AU
				direct	2619 Jan 25 11:23	23°♄28'25	
conjunction	2613 Mar 07 05:19	16°♄18'23	-1°-38'-38		2619 Apr 26 12:11	0°♄	
minimum elong	2613 Mar 07 05:17	16°♄18'22	1°38'39	evening set	2619 May 07 11:00	1°♄21'14	
max. Earth dist.	2613 Mar 07 03:39	16°♄17'52	10.78102 AU				
morning rise	2613 Mar 24 03:17	18°♄20'34		conjunction	2619 May 25 03:35	3°♄36'44	-1°-49'-48
retrograde	2613 Jul 06 17:01	25°♄50'40		minimum elong	2619 May 25 03:39	3°♄36'45	1°49'48
opposition	2613 Sep 15 05:56	22°♄27'27	-2°-12'-24	max. Earth dist.	2619 May 25 04:29	3°♄37'01	10.17754 AU
min. Earth dist.	2613 Sep 15 06:52	22°♄27'16	8.73455 AU	morning rise	2619 Jun 11 23:52	5°♄53'26	
direct	2613 Nov 22 21:27	19°♄08'04		retrograde	2619 Sep 26 16:11	14°♄07'29	
evening set	2614 Mar 02 16:45	26°♄23'15		opposition	2619 Dec 03 15:47	10°♄38'22	-2°-4'-13
				min. Earth dist.	2619 Dec 03 14:30	10°♄38'38	8.14226 AU
conjunction	2614 Mar 19 13:25	28°♄26'11	-1°-55'-25	direct	2620 Feb 08 04:06	7°♄12'25	
minimum elong	2614 Mar 19 13:23	28°♄26'10	1°55'27	evening set	2620 May 20 22:19	15°♄12'11	
max. Earth dist.	2614 Mar 19 11:45	28°♄25'40	10.68415 AU				
	2614 Apr 01 09:13	0°♄		conjunction	2620 Jun 07 19:25	17°♄29'58	-1°-28'-26
morning rise	2614 Apr 05 14:01	0°♄30'20		minimum elong	2620 Jun 07 19:28	17°♄29'59	1°28'27
retrograde	2614 Jul 19 20:47	8°♄08'51		max. Earth dist.	2620 Jun 07 20:53	17°♄30'27	10.11078 AU
opposition	2614 Sep 28 02:56	4°♄44'23	-2°-30'-24	morning rise	2620 Jun 25 19:32	19°♄48'44	
min. Earth dist.	2614 Sep 28 03:48	4°♄44'13	8.63356 AU	retrograde	2620 Oct 10 04:31	28°♄05'02	
direct	2614 Dec 05 06:35	1°♄24'14		opposition	2620 Dec 16 16:29	24°♄35'44	-1°-34'-9
evening set	2615 Mar 15 06:58	8°♄45'56		min. Earth dist.	2620 Dec 16 14:52	24°♄36'04	8.08656 AU
				direct	2621 Feb 21 04:51	21°♄08'35	
conjunction	2615 Apr 01 06:16	10°♄50'58	-2°-7'-13	evening set	2621 Jun 04 16:36	29°♄14'07	
minimum elong	2615 Apr 01 06:14	10°♄50'58	2°07'14		2621 Jun 10 16:09	0°♄	
max. Earth dist.	2615 Apr 01 04:06	10°♄50'18	10.57948 AU				
morning rise	2615 Apr 18 10:03	12°♄57'22		conjunction	2621 Jun 22 17:27	1°♄33'38	-1°-1'-37
retrograde	2615 Aug 02 07:35	20°♄44'28		minimum elong	2621 Jun 22 17:30	1°♄33'39	1°01'38
opposition	2615 Oct 11 04:53	17°♄18'47	-2°-41'-44	max. Earth dist.	2621 Jun 22 19:15	1°♄34'13	10.06767 AU
min. Earth dist.	2615 Oct 11 06:11	17°♄18'31	8.52666 AU	morning rise	2621 Jul 10 20:23	3°♄53'48	
direct	2615 Dec 17 21:33	13°♄57'39		retrograde	2621 Oct 24 15:30	12°♄09'56	
evening set	2616 Mar 27 05:50	21°♄26'42		opposition	2621 Dec 30 18:49	8°♄40'48	0°-58'-7
				min. Earth dist.	2621 Dec 30 17:08	8°♄41'09	8.05608 AU
conjunction	2616 Apr 13 08:36	23°♄34'08	-2°-13'-7	direct	2622 Mar 07 10:59	5°♄12'37	
minimum elong	2616 Apr 13 08:36	23°♄34'08	2°13'08	evening set	2622 Jun 19 15:35	13°♄22'20	
max. Earth dist.	2616 Apr 13 06:38	23°♄33'31	10.47104 AU				
morning rise	2616 Apr 30 16:05	25°♄43'01		conjunction	2622 Jul 07 18:55	15°♄42'47	0°-30'-57
	2616 Jun 07 20:39	0°♄		minimum elong	2622 Jul 07 18:56	15°♄42'47	0°30'57
retrograde	2616 Aug 15 00:57	3°♄38'31		max. Earth dist.	2622 Jul 07 21:06	15°♄43'30	10.05085 AU
opposition	2616 Oct 23 12:16	0°♄11'41	-2°-45'-21	morning rise	2622 Jul 25 23:09	18°♄03'31	
min. Earth dist.	2616 Oct 23 13:31	0°♄11'27	8.41814 AU	retrograde	2622 Nov 08 00:29	26°♄17'12	
	2616 Oct 25 23:33	30°♄		opposition	2623 Jan 13 21:37	22°♄48'32	0°-18'-25
direct	2616 Dec 29 19:00	26°♄49'27		min. Earth dist.	2623 Jan 13 19:31	22°♄48'58	8.05265 AU
	2617 Feb 28 23:51	0°♄		direct	2623 Mar 21 20:14	19°♄19'35	
evening set	2617 Apr 09 13:54	4°♄26'25		evening set	2623 Jul 04 16:28	27°♄31'33	
				asc. node	2623 Jul 04 06:49	27°♄28'30	
conjunction	2617 Apr 26 20:56	6°♄36'30	-2°-12'-24				
minimum elong	2617 Apr 26 20:57	6°♄36'30	2°12'24	conjunction	2623 Jul 22 20:40	29°♄52'04	0°01'39
max. Earth dist.	2617 Apr 26 20:00	6°♄36'12	10.36369 AU	minimum elong	2623 Jul 22 20:41	29°♄52'04	0°01'39
morning rise	2617 May 14 08:32	8°♄48'03		behind sun begin	2623 Jul 22 13:19	29°♄49'42	
	2617 Jul 12 20:00	15°♄		behind sun end	2623 Jul 23 04:03	29°♄54'26	



max. Earth dist.	2623 Jul 22 23:37	29° $\mathring{O}$ 52'58	10.06117 AU	morning rise	2629 Oct 31 06:03	22° $\mathring{O}$ 53'29	
	2623 Jul 23 21:11	0° $\mathring{O}$			2630 Jan 21 09:00	0° $\mathring{M}$	
morning rise	2623 Aug 10 00:27	2° $\mathring{O}$ 12'25		retrograde	2630 Feb 08 08:35	0° $\mathring{M}$ 17'26	
retrograde	2623 Nov 22 06:11	10° $\mathring{O}$ 21'41			2630 Feb 26 13:15	30° $\mathring{R}$ $\mathring{O}$	
opposition	2624 Jan 27 23:22	6° $\mathring{O}$ 53'45	0°22'15	opposition	2630 Apr 17 04:10	26° $\mathring{O}$ 56'47	2°44'58
min. Earth dist.	2624 Jan 27 20:32	6° $\mathring{O}$ 54'20	8.07631 AU	min. Earth dist.	2630 Apr 17 02:28	26° $\mathring{O}$ 57'07	8.60454 AU
direct	2624 Apr 04 06:12	3° $\mathring{O}$ 24'18		direct	2630 Jun 26 08:52	23° $\mathring{O}$ 30'54	
evening set	2624 Jul 18 16:42	11° $\mathring{O}$ 36'32			2630 Sep 29 18:58	0° $\mathring{M}$	
				evening set	2630 Oct 09 20:25	1° $\mathring{M}$ 11'09	
conjunction	2624 Aug 05 20:06	13° $\mathring{O}$ 56'12	0°33'54				
minimum elong	2624 Aug 05 20:05	13° $\mathring{O}$ 56'12	0°33'54	conjunction	2630 Oct 27 00:02	3° $\mathring{M}$ 16'10	2°13'44
max. Earth dist.	2624 Aug 05 23:43	13° $\mathring{O}$ 57'22	10.09782 AU	minimum elong	2630 Oct 27 00:02	3° $\mathring{M}$ 16'10	2°13'44
	2624 Aug 14 01:49	15° $\mathring{O}$		max. Earth dist.	2630 Oct 27 01:16	3° $\mathring{M}$ 16'33	10.65699 AU
morning rise	2624 Aug 23 21:44	16° $\mathring{O}$ 15'18		morning rise	2630 Nov 12 23:13	5° $\mathring{M}$ 19'53	
retrograde	2624 Dec 05 08:02	24° $\mathring{O}$ 18'27		retrograde	2631 Feb 20 19:24	12° $\mathring{M}$ 36'58	
opposition	2625 Feb 09 22:41	20° $\mathring{O}$ 51'29	1°01'15	opposition	2631 Apr 30 00:04	9° $\mathring{M}$ 17'25	2°42'24
min. Earth dist.	2625 Feb 09 19:23	20° $\mathring{O}$ 52'09	8.12534 AU	min. Earth dist.	2631 Apr 29 22:40	9° $\mathring{M}$ 17'41	8.71042 AU
direct	2625 Apr 18 15:38	17° $\mathring{O}$ 21'51		direct	2631 Jul 09 12:58	5° $\mathring{M}$ 52'51	
evening set	2625 Aug 02 13:29	25° $\mathring{O}$ 32'23		evening set	2631 Oct 22 11:54	13° $\mathring{M}$ 25'14	
					2631 Nov 04 15:35	15° $\mathring{M}$	
conjunction	2625 Aug 20 14:30	27° $\mathring{O}$ 50'25	1°03'53				
minimum elong	2625 Aug 20 14:27	27° $\mathring{O}$ 50'24	1°03'53	conjunction	2631 Nov 08 12:08	15° $\mathring{M}$ 28'03	2°08'53
max. Earth dist.	2625 Aug 20 18:25	27° $\mathring{O}$ 51'40	10.15820 AU	minimum elong	2631 Nov 08 12:09	15° $\mathring{M}$ 28'03	2°08'53
	2625 Sep 06 12:39	0° $\mathring{M}$		max. Earth dist.	2631 Nov 08 13:12	15° $\mathring{M}$ 28'22	10.75920 AU
morning rise	2625 Sep 07 12:31	0° $\mathring{M}$ 07'30		morning rise	2631 Nov 25 08:09	17° $\mathring{M}$ 29'39	
retrograde	2625 Dec 19 03:21	8° $\mathring{M}$ 03'22		retrograde	2632 Mar 04 00:36	24° $\mathring{M}$ 40'45	
opposition	2626 Feb 23 18:45	4° $\mathring{M}$ 37'33	1°36'06	opposition	2632 May 11 15:29	21° $\mathring{M}$ 22'09	2°32'39
min. Earth dist.	2626 Feb 23 15:25	4° $\mathring{M}$ 38'14	8.19643 AU	min. Earth dist.	2632 May 11 15:09	21° $\mathring{M}$ 22'13	8.80775 AU
direct	2626 May 02 23:33	1° $\mathring{M}$ 08'05		direct	2632 Jul 21 09:37	17° $\mathring{M}$ 58'53	
evening set	2626 Aug 17 04:11	9° $\mathring{M}$ 15'03		evening set	2632 Nov 02 18:58	25° $\mathring{M}$ 23'46	
conjunction	2626 Sep 04 01:28	11° $\mathring{M}$ 30'47	1°29'47	conjunction	2632 Nov 19 16:18	27° $\mathring{M}$ 24'42	1°58'28
minimum elong	2626 Sep 04 01:25	11° $\mathring{M}$ 30'46	1°29'47	minimum elong	2632 Nov 19 16:20	27° $\mathring{M}$ 24'43	1°58'28
max. Earth dist.	2626 Sep 04 05:20	11° $\mathring{M}$ 32'01	10.23844 AU	max. Earth dist.	2632 Nov 19 16:09	27° $\mathring{M}$ 24'39	10.85081 AU
morning rise	2626 Sep 21 18:54	13° $\mathring{M}$ 45'20		morning rise	2632 Dec 06 10:03	29° $\mathring{M}$ 24'36	
retrograde	2627 Jan 01 15:17	21° $\mathring{M}$ 33'15			2632 Dec 11 11:20	0° $\mathring{J}$	
opposition	2627 Mar 09 10:37	18° $\mathring{M}$ 08'43	2°04'54	retrograde	2633 Mar 16 00:34	6° $\mathring{J}$ 30'52	
min. Earth dist.	2627 Mar 09 07:57	18° $\mathring{M}$ 09'15	8.28519 AU	opposition	2633 May 24 02:55	3° $\mathring{J}$ 13'00	2°16'35
direct	2627 May 17 03:47	14° $\mathring{M}$ 39'45		min. Earth dist.	2633 May 24 03:44	3° $\mathring{J}$ 12'50	8.89248 AU
evening set	2627 Aug 31 10:50	22° $\mathring{M}$ 41'31			2633 Jul 20 10:39	30° $\mathring{R}$ $\mathring{M}$	
				direct	2633 Aug 03 02:38	29° $\mathring{M}$ 50'56	
conjunction	2627 Sep 18 03:39	24° $\mathring{M}$ 54'35	1°50'19		2633 Aug 16 17:24	0° $\mathring{J}$	
minimum elong	2627 Sep 18 03:36	24° $\mathring{M}$ 54'34	1°50'19	evening set	2633 Nov 14 18:39	7° $\mathring{J}$ 08'59	
max. Earth dist.	2627 Sep 18 06:36	24° $\mathring{M}$ 55'31	10.33385 AU				
morning rise	2627 Oct 05 16:09	27° $\mathring{M}$ 06'20		conjunction	2633 Dec 01 13:43	9° $\mathring{J}$ 08'24	1°43'13
	2627 Oct 30 06:23	0° $\mathring{O}$		minimum elong	2633 Dec 01 13:45	9° $\mathring{J}$ 08'25	1°43'13
retrograde	2628 Jan 14 20:17	4° $\mathring{O}$ 46'02		max. Earth dist.	2633 Dec 01 12:14	9° $\mathring{J}$ 07'57	10.92815 AU
opposition	2628 Mar 21 21:34	1° $\mathring{O}$ 22'49	2°26'19	morning rise	2633 Dec 18 06:00	11° $\mathring{J}$ 06'59	
min. Earth dist.	2628 Mar 21 19:38	1° $\mathring{O}$ 23'12	8.38656 AU	retrograde	2634 Mar 27 22:39	18° $\mathring{J}$ 09'43	
	2628 Apr 08 17:26	30° $\mathring{R}$ $\mathring{M}$		opposition	2634 Jun 05 11:09	14° $\mathring{J}$ 52'16	1°55'09
direct	2628 May 30 02:50	27° $\mathring{M}$ 54'39		min. Earth dist.	2634 Jun 05 12:13	14° $\mathring{J}$ 52'04	8.96121 AU
	2628 Jul 19 14:40	0° $\mathring{O}$		direct	2634 Aug 15 13:33	11° $\mathring{J}$ 31'21	
evening set	2628 Sep 13 08:05	5° $\mathring{O}$ 49'58		evening set	2634 Nov 26 12:05	18° $\mathring{J}$ 43'23	
conjunction	2628 Sep 30 20:11	8° $\mathring{O}$ 00'15	2°04'39	conjunction	2634 Dec 13 05:40	20° $\mathring{J}$ 41'41	1°23'56
minimum elong	2628 Sep 30 20:09	8° $\mathring{O}$ 00'15	2°04'39	minimum elong	2634 Dec 13 05:42	20° $\mathring{J}$ 41'42	1°23'56
max. Earth dist.	2628 Sep 30 21:59	8° $\mathring{O}$ 00'49	10.43914 AU	max. Earth dist.	2634 Dec 13 04:03	20° $\mathring{J}$ 41'12	10.98800 AU
morning rise	2628 Oct 18 03:52	10° $\mathring{O}$ 09'10		morning rise	2634 Dec 29 21:01	22° $\mathring{J}$ 39'22	
retrograde	2629 Jan 26 17:46	17° $\mathring{O}$ 40'44		retrograde	2635 Apr 08 18:44	29° $\mathring{J}$ 39'57	
opposition	2629 Apr 04 03:27	14° $\mathring{O}$ 18'51	2°39'43	opposition	2635 Jun 17 16:47	26° $\mathring{J}$ 22'40	1°29'23
min. Earth dist.	2629 Apr 04 01:51	14° $\mathring{O}$ 19'10	8.49487 AU	min. Earth dist.	2635 Jun 17 17:52	26° $\mathring{J}$ 22'28	9.01095 AU
direct	2629 Jun 12 20:46	10° $\mathring{O}$ 51'44		direct	2635 Aug 27 19:15	23° $\mathring{J}$ 02'42	
evening set	2629 Sep 26 19:18	18° $\mathring{O}$ 39'45			2635 Dec 06 15:02	0° $\mathring{O}$	
				evening set	2635 Dec 08 01:16	0° $\mathring{O}$ 09'53	
conjunction	2629 Oct 14 02:54	20° $\mathring{O}$ 47'18	2°12'27				
minimum elong	2629 Oct 14 02:53	20° $\mathring{O}$ 47'18	2°12'26	conjunction	2635 Dec 24 17:50	2° $\mathring{O}$ 07'27	1°01'29
max. Earth dist.	2629 Oct 14 04:01	20° $\mathring{O}$ 47'39	10.54863 AU	minimum elong	2635 Dec 24 17:52	2° $\mathring{O}$ 07'27	1°01'28



max. Earth dist.	2635 Dec 24 16:02	2°♄06'55	11.02753 AU	direct	2641 Nov 05 12:34	1°♄54'51	
morning rise	2636 Jan 10 08:43	4°♄04'35		evening set	2642 Feb 13 07:04	9°♄02'57	
retrograde	2636 Apr 19 16:08	11°♄04'29					
opposition	2636 Jun 28 20:45	7°♄47'08	1°00'19	conjunction	2642 Mar 02 00:54	11°♄03'31	-1°-29'-25
min. Earth dist.	2636 Jun 28 22:37	7°♄46'48	9.03924 AU	minimum elong	2642 Mar 02 00:51	11°♄03'30	1°29'27
direct	2636 Sep 07 21:10	4°♄27'56		max. Earth dist.	2642 Mar 01 20:36	11°♄02'13	10.80984 AU
evening set	2636 Dec 18 11:46	11°♄31'37		morning rise	2642 Mar 18 22:02	13°♄05'04	
				retrograde	2642 Jul 01 02:37	20°♄31'54	
conjunction	2637 Jan 04 03:34	13°♄28'49	0°36'43	opposition	2642 Sep 09 18:21	17°♄08'56	-2°-2'-11
minimum elong	2637 Jan 04 03:35	13°♄28'50	0°36'43	min. Earth dist.	2642 Sep 09 21:31	17°♄08'20	8.76350 AU
max. Earth dist.	2637 Jan 04 00:27	13°♄27'54	11.04467 AU	direct	2642 Nov 17 15:01	13°♄49'22	
morning rise	2637 Jan 20 18:37	15°♄25'50		evening set	2643 Feb 25 09:58	21°♄02'31	
retrograde	2637 May 01 12:24	22°♄26'39					
opposition	2637 Jul 11 00:22	19°♄08'58	0°29'01	conjunction	2643 Mar 14 05:39	23°♄04'45	-1°-48'-13
min. Earth dist.	2637 Jul 11 03:36	19°♄08'22	9.04466 AU	minimum elong	2643 Mar 14 05:37	23°♄04'44	1°48'15
direct	2637 Sep 19 19:00	15°♄50'20		max. Earth dist.	2643 Mar 14 02:09	23°♄03'41	10.71335 AU
evening set	2637 Dec 29 21:02	22°♄52'00		morning rise	2643 Mar 31 05:08	25°♄08'10	
					2643 May 16 02:58	0°♄	
conjunction	2638 Jan 15 12:27	24°♄49'11	0°10'34	retrograde	2643 Jul 14 02:21	2°♄43'21	
minimum elong	2638 Jan 15 12:27	24°♄49'11	0°10'34		2643 Sep 13 13:50	30°♄	
behind sun begin	2638 Jan 15 06:59	24°♄47'35		opposition	2643 Sep 22 13:18	29°♄18'57	-2°-22'-55
behind sun end	2638 Jan 15 17:55	24°♄50'47		min. Earth dist.	2643 Sep 22 15:47	29°♄18'28	8.66236 AU
max. Earth dist.	2638 Jan 15 08:01	24°♄47'54	11.03878 AU	direct	2643 Nov 29 23:46	25°♄58'34	
morning rise	2638 Feb 01 04:07	26°♄46'27			2644 Feb 08 16:18	0°♄	
	2638 Mar 03 00:43	0°♄		evening set	2644 Mar 08 20:20	3°♄17'54	
retrograde	2638 May 13 10:50	3°♄49'50					
desc. node	2638 Jun 13 02:56	3°♄05'50		conjunction	2644 Mar 25 18:31	5°♄22'09	-2°-2'-28
opposition	2638 Jul 23 04:25	0°♄31'31	0°-3'-27	minimum elong	2644 Mar 25 18:29	5°♄22'08	2°02'30
min. Earth dist.	2638 Jul 23 08:04	0°♄30'51	9.02736 AU	max. Earth dist.	2644 Mar 25 16:27	5°♄21'31	10.60798 AU
	2638 Jul 30 07:57	30°♄		morning rise	2644 Apr 11 20:44	7°♄27'42	
direct	2638 Oct 01 17:34	27°♄13'10		retrograde	2644 Jul 26 10:52	15°♄11'39	
	2638 Nov 30 12:56	0°♄		opposition	2644 Oct 04 13:15	11°♄45'51	-2°-37'-31
evening set	2639 Jan 10 06:54	4°♄14'18		min. Earth dist.	2644 Oct 04 14:26	11°♄45'37	8.55454 AU
				direct	2644 Dec 11 12:23	8°♄24'32	
conjunction	2639 Jan 26 22:28	6°♄11'51	0°-16'-10	evening set	2645 Mar 21 15:20	15°♄50'55	
minimum elong	2639 Jan 26 22:28	6°♄11'51	0°16'10				
behind sun begin	2639 Jan 26 21:40	6°♄11'37		conjunction	2645 Apr 07 16:36	17°♄57'29	-2°-11'-13
behind sun end	2639 Jan 26 23:15	6°♄12'05		minimum elong	2645 Apr 07 16:36	17°♄57'29	2°11'14
max. Earth dist.	2639 Jan 26 18:14	6°♄10'36	11.01058 AU	max. Earth dist.	2645 Apr 07 15:12	17°♄57'03	10.49842 AU
morning rise	2639 Feb 12 14:58	8°♄09'42		morning rise	2645 Apr 24 22:15	20°♄05'28	
	2639 May 06 21:31	15°♄		retrograde	2645 Aug 09 02:54	27°♄58'04	
retrograde	2639 May 25 14:06	15°♄17'03		opposition	2645 Oct 17 18:33	24°♄31'01	-2°-44'-50
	2639 Jun 13 10:40	15°♄		min. Earth dist.	2645 Oct 17 18:59	24°♄30'55	8.44497 AU
opposition	2639 Aug 04 09:33	11°♄57'52	0°-36'00	direct	2645 Dec 24 05:29	21°♄08'37	
min. Earth dist.	2639 Aug 04 12:48	11°♄57'15	8.98850 AU	evening set	2646 Apr 03 19:33	28°♄42'45	
direct	2639 Oct 13 15:02	8°♄39'34			2646 Apr 14 03:42	0°♄	
	2640 Jan 15 18:36	15°♄					
evening set	2640 Jan 21 18:53	15°♄41'37		conjunction	2646 Apr 21 00:37	0°♄51'51	-2°-13'-38
				minimum elong	2646 Apr 21 00:37	0°♄51'51	2°13'39
conjunction	2640 Feb 07 10:56	17°♄39'50	0°-42'-22	max. Earth dist.	2646 Apr 20 23:26	0°♄51'29	10.38983 AU
minimum elong	2640 Feb 07 10:54	17°♄39'50	0°42'22	morning rise	2646 May 08 10:20	3°♄02'26	
max. Earth dist.	2640 Feb 07 07:14	17°♄38'45	10.96149 AU	retrograde	2646 Aug 22 23:57	11°♄03'06	
morning rise	2640 Feb 24 04:30	19°♄38'36		opposition	2646 Oct 31 05:14	7°♄34'59	-2°-43'-54
retrograde	2640 Jun 05 20:45	26°♄51'18		min. Earth dist.	2646 Oct 31 05:22	7°♄34'57	8.33890 AU
opposition	2640 Aug 15 17:06	23°♄30'59	-1°-7'-27	direct	2647 Jan 06 07:28	4°♄11'26	
min. Earth dist.	2640 Aug 15 19:55	23°♄30'27	8.92983 AU	evening set	2647 Apr 17 09:20	11°♄53'35	
direct	2640 Oct 24 12:33	20°♄12'30					
evening set	2641 Feb 01 10:25	27°♄16'53		conjunction	2647 May 04 18:47	14°♄05'23	-2°-9'-7
				minimum elong	2647 May 04 18:49	14°♄05'24	2°09'07
conjunction	2641 Feb 18 03:07	29°♄16'06	-1°-7'-7	max. Earth dist.	2647 May 04 18:04	14°♄05'09	10.28766 AU
minimum elong	2641 Feb 18 03:05	29°♄16'06	1°07'08		2647 May 11 22:47	15°♄	
max. Earth dist.	2641 Feb 17 23:03	29°♄14'53	10.89364 AU	morning rise	2647 May 22 08:54	16°♄18'39	
	2641 Feb 24 05:43	0°♄		retrograde	2647 Sep 06 02:55	24°♄26'15	
morning rise	2641 Mar 06 22:15	1°♄16'05		opposition	2647 Nov 13 20:54	20°♄57'19	-2°-34'-10
retrograde	2641 Jun 18 09:25	8°♄35'22		min. Earth dist.	2647 Nov 13 20:47	20°♄57'20	8.24198 AU
opposition	2641 Aug 28 03:53	5°♄13'46	-1°-36'-36	direct	2648 Jan 19 16:16	17°♄32'35	
min. Earth dist.	2641 Aug 28 06:57	5°♄13'12	8.85381 AU	evening set	2648 Apr 30 08:30	25°♄22'36	



conjunction	2648 May 17 22:49	27° $\text{♄}$ 37'06	-1°-57'-28	opposition	2654 Feb 04 02:31	14° $\text{♊}$ 52'19	0°44'05
minimum elong	2648 May 17 22:51	27° $\text{♄}$ 37'07	1°57'28	min. Earth dist.	2654 Feb 03 23:10	14° $\text{♊}$ 53'00	8.10552 AU
max. Earth dist.	2648 May 17 23:24	27° $\text{♄}$ 37'17	10.19764 AU	direct	2654 Apr 12 12:54	11° $\text{♊}$ 23'11	
morning rise	2648 Jun 04 17:20	29° $\text{♄}$ 52'56			2654 Jun 17 13:19	15° $\text{♊}$	
	2648 Jun 05 15:53	0° $\text{♊}$		evening set	2654 Jul 27 07:51	19° $\text{♊}$ 34'54	
retrograde	2648 Sep 19 11:00	8° $\text{♊}$ 05'51					
opposition	2648 Nov 26 17:07	4° $\text{♊}$ 36'23	-2°-15'-33	conjunction	2654 Aug 14 09:56	21° $\text{♊}$ 53'42	0°50'49
min. Earth dist.	2648 Nov 26 16:05	4° $\text{♊}$ 36'36	8.15987 AU	minimum elong	2654 Aug 14 09:54	21° $\text{♊}$ 53'42	0°50'49
direct	2649 Feb 01 07:44	1° $\text{♊}$ 10'31		max. Earth dist.	2654 Aug 14 13:54	21° $\text{♊}$ 54'59	10.13538 AU
evening set	2649 May 14 16:26	9° $\text{♊}$ 07'50		morning rise	2654 Sep 01 09:47	24° $\text{♊}$ 11'46	
					2654 Oct 24 17:11	0° $\text{♋}$	
conjunction	2649 Jun 01 11:38	11° $\text{♊}$ 24'47	-1°-38'-57	retrograde	2654 Dec 13 10:12	2° $\text{♋}$ 11'06	
minimum elong	2649 Jun 01 11:41	11° $\text{♊}$ 24'49	1°38'57		2655 Feb 02 09:19	30° $\text{♋}$	
max. Earth dist.	2649 Jun 01 13:49	11° $\text{♊}$ 25'30	10.12514 AU	opposition	2655 Feb 18 00:41	28° $\text{♋}$ 45'16	1°21'04
morning rise	2649 Jun 19 10:14	13° $\text{♊}$ 42'53		min. Earth dist.	2655 Feb 17 21:33	28° $\text{♋}$ 45'54	8.17060 AU
retrograde	2649 Oct 03 22:24	21° $\text{♊}$ 59'02		direct	2655 Apr 26 23:49	25° $\text{♋}$ 16'14	
opposition	2649 Dec 10 16:53	18° $\text{♊}$ 29'25	-1°-48'-44		2655 Jul 13 03:45	0° $\text{♋}$	
min. Earth dist.	2649 Dec 10 14:40	18° $\text{♊}$ 29'52	8.09759 AU	evening set	2655 Aug 11 01:49	3° $\text{♋}$ 24'59	
direct	2650 Feb 15 06:01	15° $\text{♊}$ 02'31					
evening set	2650 May 29 08:14	23° $\text{♊}$ 06'06		conjunction	2655 Aug 29 00:44	5° $\text{♋}$ 41'42	1°18'44
				minimum elong	2655 Aug 29 00:40	5° $\text{♋}$ 41'41	1°18'44
conjunction	2650 Jun 16 07:40	25° $\text{♊}$ 25'04	-1°-14'-23	max. Earth dist.	2655 Aug 29 03:59	5° $\text{♋}$ 42'45	10.20986 AU
minimum elong	2650 Jun 16 07:43	25° $\text{♊}$ 25'05	1°14'24	morning rise	2655 Sep 15 20:27	7° $\text{♋}$ 57'24	
max. Earth dist.	2650 Jun 16 11:13	25° $\text{♊}$ 26'13	10.07470 AU	retrograde	2655 Dec 27 00:52	15° $\text{♋}$ 48'56	
morning rise	2650 Jul 04 09:28	27° $\text{♊}$ 44'50		opposition	2656 Mar 02 18:42	12° $\text{♋}$ 24'20	1°52'45
	2650 Jul 22 16:28	0° $\text{♋}$		min. Earth dist.	2656 Mar 02 15:45	12° $\text{♋}$ 24'56	8.25352 AU
retrograde	2650 Oct 18 10:42	6° $\text{♋}$ 01'54		direct	2656 May 10 06:26	8° $\text{♋}$ 55'40	
opposition	2650 Dec 24 19:00	2° $\text{♋}$ 32'29	-1°-15'-4	evening set	2656 Aug 24 12:35	16° $\text{♋}$ 59'52	
min. Earth dist.	2650 Dec 24 15:45	2° $\text{♋}$ 33'09	8.05924 AU				
	2651 Jan 28 12:30	30° $\text{♋}$		conjunction	2656 Sep 11 07:27	19° $\text{♋}$ 14'06	1°41'48
direct	2651 Mar 01 09:15	29° $\text{♋}$ 04'43		minimum elong	2656 Sep 11 07:24	19° $\text{♋}$ 14'05	1°41'47
	2651 Apr 02 00:16	0° $\text{♋}$		max. Earth dist.	2656 Sep 11 10:03	19° $\text{♋}$ 14'55	10.29916 AU
evening set	2651 Jun 13 05:51	7° $\text{♋}$ 13'11		morning rise	2656 Sep 28 22:19	21° $\text{♋}$ 27'05	
				retrograde	2657 Jan 08 10:02	29° $\text{♋}$ 10'31	
conjunction	2651 Jul 01 08:23	9° $\text{♋}$ 33'27	0°-45'-11	opposition	2657 Mar 16 07:58	25° $\text{♋}$ 47'13	2°17'35
minimum elong	2651 Jul 01 08:25	9° $\text{♋}$ 33'27	0°45'12	min. Earth dist.	2657 Mar 16 05:29	25° $\text{♋}$ 47'43	8.34844 AU
max. Earth dist.	2651 Jul 01 12:57	9° $\text{♋}$ 34'55	10.04977 AU	direct	2657 May 24 07:30	22° $\text{♋}$ 19'13	
morning rise	2651 Jul 19 12:06	11° $\text{♋}$ 54'07			2657 Sep 05 04:56	0° $\text{♌}$	
retrograde	2651 Nov 01 22:47	20° $\text{♋}$ 09'45		evening set	2657 Sep 07 14:38	0° $\text{♌}$ 17'39	
opposition	2652 Jan 07 22:20	16° $\text{♋}$ 40'52	0°-36'-39				
min. Earth dist.	2652 Jan 07 18:31	16° $\text{♋}$ 41'39	8.04758 AU	conjunction	2657 Sep 25 04:59	2° $\text{♌}$ 29'12	1°58'57
direct	2652 Mar 14 16:08	13° $\text{♋}$ 12'24		minimum elong	2657 Sep 25 04:56	2° $\text{♌}$ 29'11	1°58'56
evening set	2652 Jun 27 06:45	21° $\text{♋}$ 23'57		max. Earth dist.	2657 Sep 25 07:07	2° $\text{♌}$ 29'52	10.39794 AU
				morning rise	2657 Oct 12 14:45	4° $\text{♌}$ 39'22	
conjunction	2652 Jul 15 10:51	23° $\text{♋}$ 44'39	0°-13'-12	retrograde	2658 Jan 21 12:43	12° $\text{♌}$ 14'48	
minimum elong	2652 Jul 15 10:52	23° $\text{♋}$ 44'39	0°13'12	opposition	2658 Mar 29 16:37	8° $\text{♌}$ 52'48	2°34'36
behind sun begin	2652 Jul 15 06:43	23° $\text{♋}$ 43'19		min. Earth dist.	2658 Mar 29 15:02	8° $\text{♌}$ 53'06	8.45059 AU
behind sun end	2652 Jul 15 15:01	23° $\text{♋}$ 45'59		direct	2658 Jun 07 03:09	5° $\text{♌}$ 25'39	
max. Earth dist.	2652 Jul 15 15:44	23° $\text{♋}$ 46'13	10.05209 AU	evening set	2658 Sep 21 06:53	13° $\text{♌}$ 17'20	
morning rise	2652 Aug 02 14:58	26° $\text{♋}$ 05'21					
	2652 Sep 04 13:28	0° $\text{♌}$		conjunction	2658 Oct 08 16:36	15° $\text{♌}$ 26'10	2°09'40
retrograde	2652 Nov 15 08:18	4° $\text{♌}$ 17'19		minimum elong	2658 Oct 08 16:35	15° $\text{♌}$ 26'09	2°09'39
asc. node	2652 Dec 15 03:49	3° $\text{♌}$ 28'48		max. Earth dist.	2658 Oct 08 17:55	15° $\text{♌}$ 26'34	10.50185 AU
opposition	2653 Jan 21 01:22	0° $\text{♌}$ 49'15	0°03'58	morning rise	2658 Oct 25 21:36	17° $\text{♌}$ 33'36	
min. Earth dist.	2653 Jan 20 21:42	0° $\text{♌}$ 50'00	8.06342 AU	retrograde	2659 Feb 03 06:57	25° $\text{♌}$ 01'21	
	2653 Jan 31 02:28	30° $\text{♌}$		opposition	2659 Apr 11 20:19	21° $\text{♌}$ 40'31	2°43'28
direct	2653 Mar 29 01:43	27° $\text{♌}$ 20'20		min. Earth dist.	2659 Apr 11 19:51	21° $\text{♌}$ 40'37	8.55564 AU
	2653 May 23 15:47	0° $\text{♌}$		direct	2659 Jun 20 18:33	18° $\text{♌}$ 14'22	
evening set	2653 Jul 12 08:30	5° $\text{♌}$ 33'00		evening set	2659 Oct 04 13:12	25° $\text{♌}$ 58'38	
conjunction	2653 Jul 30 12:26	7° $\text{♌}$ 53'11	0°19'33	conjunction	2659 Oct 21 18:35	28° $\text{♌}$ 04'52	2°13'48
minimum elong	2653 Jul 30 12:25	7° $\text{♌}$ 53'11	0°19'33	minimum elong	2659 Oct 21 18:35	28° $\text{♌}$ 04'52	2°13'48
max. Earth dist.	2653 Jul 30 16:57	7° $\text{♌}$ 54'38	10.08138 AU	max. Earth dist.	2659 Oct 21 18:35	28° $\text{♌}$ 04'52	10.60645 AU
morning rise	2653 Aug 17 15:12	10° $\text{♌}$ 12'59			2659 Nov 06 11:08	0° $\text{♍}$	
	2653 Sep 28 06:09	15° $\text{♌}$		morning rise	2659 Nov 07 19:30	0° $\text{♍}$ 09'46	
retrograde	2653 Nov 29 13:06	18° $\text{♌}$ 19'20		retrograde	2660 Feb 15 19:31	7° $\text{♍}$ 30'22	
	2654 Feb 02 13:04	15° $\text{♍}$		opposition	2660 Apr 23 18:52	4° $\text{♍}$ 10'33	2°44'18



min. Earth dist.	2660 Apr 23 19:19	4°♈10'28	8.65892 AU	retrograde	2666 Apr 26 18:31	17°♊50'45	
direct	2660 Jul 03 02:58	0°♈45'27		opposition	2666 Jul 06 04:34	14°♊32'35	0°42'38
evening set	2660 Oct 16 09:42	8°♈22'00		min. Earth dist.	2666 Jul 06 06:19	14°♊32'15	9.02407 AU
				direct	2666 Sep 15 03:01	11°♊13'06	
conjunction	2660 Nov 02 11:20	10°♈25'55	2°11'36	evening set	2666 Dec 25 09:16	18°♊16'04	
minimum elong	2660 Nov 02 11:21	10°♈25'55	2°11'36				
max. Earth dist.	2660 Nov 02 10:06	10°♈25'32	10.70708 AU	conjunction	2667 Jan 11 01:05	20°♊13'26	0°21'51
morning rise	2660 Nov 19 08:54	12°♈28'35		minimum elong	2667 Jan 11 01:06	20°♊13'26	0°21'51
	2660 Dec 11 11:26	15°♈		max. Earth dist.	2667 Jan 10 23:00	20°♊12'49	11.02478 AU
retrograde	2661 Feb 27 02:26	19°♈42'51		morning rise	2667 Jan 27 16:28	22°♊10'43	
opposition	2661 May 06 12:48	16°♈23'50	2°37'39	retrograde	2667 May 08 17:16	29°♊13'18	
min. Earth dist.	2661 May 06 13:19	16°♈23'44	8.75575 AU	opposition	2667 Jul 18 08:21	25°♊54'41	0°10'29
	2661 May 25 10:06	15°♈		min. Earth dist.	2667 Jul 18 10:00	25°♊54'23	9.02044 AU
direct	2661 Jul 16 04:55	12°♈59'51		direct	2667 Sep 27 01:10	22°♊35'43	
	2661 Sep 04 15:05	15°♈		desc. node	2667 Nov 16 11:09	24°♊36'13	
evening set	2661 Oct 28 20:55	20°♈28'44		evening set	2668 Jan 05 18:55	29°♊37'20	
					2668 Jan 09 00:51	0°♈	
conjunction	2661 Nov 14 19:32	22°♈30'38	2°03'33				
minimum elong	2661 Nov 14 19:33	22°♈30'39	2°03'33	conjunction	2668 Jan 22 10:30	1°♈34'49	0°-4'-48
max. Earth dist.	2661 Nov 14 18:20	22°♈30'17	10.79924 AU	minimum elong	2668 Jan 22 10:30	1°♈34'49	0°04'49
morning rise	2661 Dec 01 14:23	24°♈31'27		behind sun begin	2668 Jan 22 03:41	1°♈32'50	
	2662 Jan 25 11:41	0°♈		behind sun end	2668 Jan 22 17:19	1°♈36'49	
retrograde	2662 Mar 11 05:11	1°♈40'25		max. Earth dist.	2668 Jan 22 07:49	1°♈34'04	11.01088 AU
	2662 Apr 26 11:34	30°♈		morning rise	2668 Feb 08 02:34	3°♈32'30	
opposition	2662 May 19 02:29	28°♈21'59	2°24'14	retrograde	2668 May 19 18:43	10°♈38'12	
min. Earth dist.	2662 May 19 02:58	28°♈21'54	8.84201 AU	opposition	2668 Jul 29 13:01	7°♈18'59	0°-22'-10
direct	2662 Jul 29 01:20	24°♈59'05		min. Earth dist.	2668 Jul 29 15:16	7°♈18'34	8.99625 AU
	2662 Oct 20 04:06	0°♈		direct	2668 Oct 07 21:25	4°♈00'19	
evening set	2662 Nov 10 00:04	2°♈20'47		evening set	2669 Jan 16 05:54	11°♈02'02	
conjunction	2662 Nov 26 20:21	4°♈21'03	1°50'18	conjunction	2669 Feb 01 21:35	12°♈59'59	0°-31'-16
minimum elong	2662 Nov 26 20:23	4°♈21'03	1°50'19	minimum elong	2669 Feb 01 21:34	12°♈59'59	0°31'17
max. Earth dist.	2662 Nov 26 19:21	4°♈20'45	10.87913 AU	max. Earth dist.	2669 Feb 01 18:17	12°♈59'00	10.97675 AU
morning rise	2662 Dec 13 13:13	6°♈20'22		morning rise	2669 Feb 18 14:46	14°♈58'22	
retrograde	2663 Mar 23 05:42	13°♈25'13			2669 Feb 18 20:22	15°♈	
opposition	2663 May 31 12:27	10°♈07'10	2°05'01	retrograde	2669 May 31 21:57	22°♈08'40	
min. Earth dist.	2663 May 31 13:33	10°♈06'58	8.91434 AU	opposition	2669 Aug 10 19:37	18°♈48'37	0°-54'-12
direct	2663 Aug 10 13:51	6°♈45'17		min. Earth dist.	2669 Aug 10 22:05	18°♈48'09	8.95250 AU
evening set	2663 Nov 21 20:33	14°♈00'34		direct	2669 Oct 19 19:13	15°♈30'03	
				evening set	2670 Jan 27 19:36	22°♈33'19	
conjunction	2663 Dec 08 14:57	15°♈59'34	1°32'40				
minimum elong	2663 Dec 08 14:59	15°♈59'34	1°32'40	conjunction	2670 Feb 13 11:55	24°♈32'04	0°-56'-45
max. Earth dist.	2663 Dec 08 13:13	15°♈59'03	10.94365 AU	minimum elong	2670 Feb 13 11:53	24°♈32'03	0°56'46
morning rise	2663 Dec 25 06:42	17°♈57'50		max. Earth dist.	2670 Feb 13 09:14	24°♈31'16	10.92362 AU
retrograde	2664 Apr 03 01:53	24°♈59'52		morning rise	2670 Mar 02 06:24	26°♈31'28	
opposition	2664 Jun 11 19:35	21°♈42'00	1°40'58		2670 Apr 03 05:42	0°♈	
min. Earth dist.	2664 Jun 11 21:44	21°♈41'36	8.97001 AU	retrograde	2670 Jun 13 08:10	3°♈47'40	
direct	2664 Aug 21 21:28	18°♈21'01		opposition	2670 Jun 23 04:47	0°♈26'37	-1°-24'-26
evening set	2664 Dec 02 11:53	25°♈30'58		min. Earth dist.	2670 Aug 23 06:32	0°♈26'17	8.89071 AU
					2670 Aug 29 03:26	30°♈	
conjunction	2664 Dec 19 04:50	27°♈29'02	1°11'27	direct	2670 Oct 31 19:09	27°♈07'57	
minimum elong	2664 Dec 19 04:52	27°♈29'03	1°11'27		2670 Dec 30 15:22	0°♈	
max. Earth dist.	2664 Dec 19 01:59	27°♈28'11	10.99044 AU	evening set	2671 Feb 08 13:49	4°♈14'09	
morning rise	2665 Jan 04 20:05	29°♈26'37					
	2665 Jan 09 15:58	0°♈		conjunction	2671 Feb 25 07:12	6°♈14'02	-1°-20'-12
retrograde	2665 Apr 14 21:51	6°♈27'20		minimum elong	2671 Feb 25 07:10	6°♈14'02	1°20'13
opposition	2665 Jun 24 00:38	3°♈09'26	1°13'09	max. Earth dist.	2671 Feb 25 05:31	6°♈13'32	10.85337 AU
min. Earth dist.	2665 Jun 24 02:57	3°♈09'00	9.00702 AU	morning rise	2671 Mar 14 03:16	8°♈14'48	
	2665 Aug 19 03:58	30°♈		retrograde	2671 Jun 26 00:12	15°♈37'56	
direct	2665 Sep 03 02:41	29°♈49'15		opposition	2671 Sep 04 17:15	12°♈15'47	-1°-51'-38
	2665 Sep 17 22:19	0°♈		min. Earth dist.	2671 Sep 04 18:13	12°♈15'36	8.81318 AU
evening set	2665 Dec 13 23:35	6°♈55'03		direct	2671 Nov 12 19:23	8°♈56'50	
				evening set	2672 Feb 20 13:50	16°♈07'18	
conjunction	2665 Dec 30 15:45	8°♈52'36	0°47'33				
minimum elong	2665 Dec 30 15:47	8°♈52'36	0°47'32	conjunction	2672 Mar 08 08:37	18°♈08'38	-1°-40'-34
max. Earth dist.	2665 Dec 30 13:01	8°♈51'47	11.01785 AU	minimum elong	2672 Mar 08 08:34	18°♈08'38	1°40'35
morning rise	2666 Jan 16 06:54	10°♈49'51		max. Earth dist.	2672 Mar 08 07:01	18°♈08'09	10.76880 AU



morning rise	2672 Mar 25 06:47	20° $\text{X}$ 11'02		conjunction	2678 May 26 09:45	5° $\text{II}$ 32'32	-1°-47'-46
retrograde	2672 Jul 07 21:45	27° $\text{X}$ 42'00		minimum elong	2678 May 26 09:48	5° $\text{II}$ 32'33	1°47'47
opposition	2672 Sep 16 10:07	24° $\text{X}$ 18'40	-2°-14'-30	max. Earth dist.	2678 May 26 10:13	5° $\text{II}$ 32'41	10.18079 AU
min. Earth dist.	2672 Sep 16 10:53	24° $\text{X}$ 18'31	8.72299 AU	morning rise	2678 Jun 13 06:22	7° $\text{II}$ 49'16	
direct	2672 Nov 24 00:33	20° $\text{X}$ 59'11		retrograde	2678 Sep 27 22:18	16° $\text{II}$ 02'50	
evening set	2673 Mar 03 20:38	28° $\text{X}$ 15'06		opposition	2678 Dec 04 20:50	12° $\text{II}$ 33'48	-2°-1'-18
	2673 Mar 18 05:56	0° $\text{Y}$		min. Earth dist.	2678 Dec 04 19:55	12° $\text{II}$ 34'00	8.14659 AU
				direct	2679 Feb 09 09:49	9° $\text{II}$ 07'51	
conjunction	2673 Mar 20 17:23	0° $\text{Y}$ 18'13	-1°-56'-50	evening set	2679 May 23 04:16	17° $\text{II}$ 07'26	
minimum elong	2673 Mar 20 17:21	0° $\text{Y}$ 18'12	1°56'51				
max. Earth dist.	2673 Mar 20 15:31	0° $\text{Y}$ 17'39	10.67338 AU	conjunction	2679 Jun 10 01:32	19° $\text{II}$ 25'10	-1°-25'-52
morning rise	2673 Apr 06 18:17	2° $\text{Y}$ 22'35		minimum elong	2679 Jun 10 01:35	19° $\text{II}$ 25'11	1°25'52
retrograde	2673 Jul 21 02:18	10° $\text{Y}$ 01'53		max. Earth dist.	2679 Jun 10 02:29	19° $\text{II}$ 25'28	10.11619 AU
opposition	2673 Sep 29 07:42	6° $\text{Y}$ 37'20	-2°-31'-48	morning rise	2679 Jun 28 01:54	21° $\text{II}$ 43'53	
min. Earth dist.	2673 Sep 29 08:43	6° $\text{Y}$ 37'08	8.62380 AU	retrograde	2679 Oct 12 08:17	29° $\text{II}$ 59'31	
direct	2673 Dec 06 10:22	3° $\text{Y}$ 17'05		opposition	2679 Dec 18 21:06	26° $\text{II}$ 30'21	-1°-30'-40
evening set	2674 Mar 16 11:28	10° $\text{Y}$ 39'26		min. Earth dist.	2679 Dec 18 19:54	26° $\text{II}$ 30'35	8.09288 AU
				direct	2680 Feb 23 11:06	23° $\text{II}$ 03'13	
conjunction	2674 Apr 02 11:02	12° $\text{Y}$ 44'38	-2°-8'-1		2680 May 27 19:40	0° $\text{III}$	
minimum elong	2674 Apr 02 11:00	12° $\text{Y}$ 44'38	2°08'01	evening set	2680 Jun 05 22:13	1° $\text{III}$ 08'23	
max. Earth dist.	2674 Apr 02 09:41	12° $\text{Y}$ 44'13	10.57093 AU				
morning rise	2674 Apr 19 15:06	14° $\text{Y}$ 51'14		conjunction	2680 Jun 23 23:12	3° $\text{III}$ 27'49	0°-58'-40
retrograde	2674 Aug 03 12:59	22° $\text{Y}$ 38'57		minimum elong	2680 Jun 23 23:15	3° $\text{III}$ 27'50	0°58'41
opposition	2674 Oct 12 10:02	19° $\text{Y}$ 13'11	-2°-42'-18	max. Earth dist.	2680 Jun 24 00:53	3° $\text{III}$ 28'22	10.07489 AU
min. Earth dist.	2674 Oct 12 10:53	19° $\text{Y}$ 13'01	8.51956 AU	morning rise	2680 Jul 12 02:14	5° $\text{III}$ 47'52	
direct	2674 Dec 19 02:00	15° $\text{Y}$ 52'00		retrograde	2680 Oct 25 18:32	14° $\text{III}$ 03'13	
evening set	2675 Mar 29 10:58	23° $\text{Y}$ 21'33		opposition	2680 Dec 31 22:56	10° $\text{III}$ 34'13	0°-54'-17
				min. Earth dist.	2680 Dec 31 21:14	10° $\text{III}$ 34'34	8.06404 AU
conjunction	2675 Apr 15 14:08	25° $\text{Y}$ 29'08	-2°-13'-13	direct	2681 Mar 08 16:05	7° $\text{III}$ 06'05	
minimum elong	2675 Apr 15 14:07	25° $\text{Y}$ 29'08	2°13'13	evening set	2681 Jun 20 20:41	15° $\text{III}$ 15'16	
max. Earth dist.	2675 Apr 15 13:40	25° $\text{Y}$ 29'00	10.46547 AU				
morning rise	2675 May 02 21:49	27° $\text{Y}$ 38'10		conjunction	2681 Jul 09 00:08	17° $\text{III}$ 35'37	0°-27'-49
	2675 May 22 22:08	0° $\text{Z}$		minimum elong	2681 Jul 09 00:10	17° $\text{III}$ 35'37	0°27'50
retrograde	2675 Aug 17 05:52	5° $\text{Z}$ 34'01		max. Earth dist.	2681 Jul 09 02:44	17° $\text{III}$ 36'27	10.05947 AU
opposition	2675 Oct 25 17:34	2° $\text{Z}$ 07'07	-2°-45'00	morning rise	2681 Jul 27 04:18	19° $\text{III}$ 56'10	
min. Earth dist.	2675 Oct 25 17:46	2° $\text{Z}$ 07'05	8.41428 AU	retrograde	2681 Nov 09 03:50	28° $\text{III}$ 09'00	
	2675 Nov 23 18:23	30° $\text{R}$ $\text{Y}$		opposition	2682 Jan 15 01:06	24° $\text{III}$ 40'27	0°-14'-30
direct	2676 Jan 01 01:03	28° $\text{Y}$ 44'51		min. Earth dist.	2682 Jan 14 22:33	24° $\text{III}$ 40'59	8.06177 AU
	2676 Feb 07 11:25	0° $\text{Z}$		direct	2682 Mar 23 00:09	21° $\text{III}$ 11'33	
evening set	2676 Apr 10 19:31	6° $\text{Z}$ 22'05		asc. node	2682 May 30 07:45	25° $\text{III}$ 06'03	
				evening set	2682 Jul 05 21:09	29° $\text{III}$ 22'57	
conjunction	2676 Apr 28 02:53	8° $\text{Z}$ 32'17	-2°-11'-45		2682 Jul 10 17:23	0° $\text{IV}$	
minimum elong	2676 Apr 28 02:54	8° $\text{Z}$ 32'18	2°11'45				
max. Earth dist.	2676 Apr 28 03:08	8° $\text{Z}$ 32'22	10.36139 AU	conjunction	2682 Jul 24 01:23	1° $\text{IV}$ 43'18	0°04'46
morning rise	2676 May 15 14:39	10° $\text{Z}$ 43'55		minimum elong	2682 Jul 24 01:22	1° $\text{IV}$ 43'17	0°04'47
	2676 Jun 22 03:23	15° $\text{Z}$		behind sun begin	2682 Jul 23 18:12	1° $\text{IV}$ 40'59	
retrograde	2676 Aug 30 06:44	18° $\text{Z}$ 47'12		behind sun end	2682 Jul 24 08:33	1° $\text{IV}$ 45'36	
opposition	2676 Nov 07 06:12	15° $\text{Z}$ 19'21	-2°-39'-9	max. Earth dist.	2682 Jul 24 04:52	1° $\text{IV}$ 44'23	10.07067 AU
min. Earth dist.	2676 Nov 07 05:40	15° $\text{Z}$ 19'27	8.31288 AU	morning rise	2682 Aug 11 04:53	4° $\text{IV}$ 03'25	
	2676 Nov 11 07:12	15° $\text{R}$ $\text{Z}$		retrograde	2682 Nov 23 09:45	12° $\text{IV}$ 11'47	
direct	2677 Jan 13 04:46	11° $\text{Z}$ 55'55		opposition	2683 Jan 29 02:12	8° $\text{IV}$ 43'58	0°26'01
	2677 Mar 13 23:09	15° $\text{Z}$		min. Earth dist.	2683 Jan 28 23:06	8° $\text{IV}$ 44'36	8.08603 AU
evening set	2677 Apr 24 13:40	19° $\text{Z}$ 41'01		direct	2683 Apr 06 09:37	5° $\text{IV}$ 14'35	
				evening set	2683 Jul 20 20:47	13° $\text{IV}$ 26'14	
conjunction	2677 May 12 01:41	21° $\text{Z}$ 53'56	-2°-3'-15		2683 Aug 02 02:23	15° $\text{IV}$	
minimum elong	2677 May 12 01:43	21° $\text{Z}$ 53'56	2°03'16				
max. Earth dist.	2677 May 12 02:08	21° $\text{Z}$ 54'05	10.26437 AU	conjunction	2683 Aug 08 00:02	15° $\text{IV}$ 45'40	0°36'48
morning rise	2677 May 29 17:54	24° $\text{Z}$ 08'13		minimum elong	2683 Aug 08 00:00	15° $\text{IV}$ 45'40	0°36'48
	2677 Jul 23 02:44	0° $\text{III}$		max. Earth dist.	2683 Aug 08 03:52	15° $\text{IV}$ 46'55	10.10763 AU
retrograde	2677 Sep 13 12:56	2° $\text{III}$ 17'34		morning rise	2683 Aug 26 01:16	18° $\text{IV}$ 04'31	
	2677 Nov 06 00:26	30° $\text{R}$ $\text{Z}$		retrograde	2683 Dec 07 10:24	26° $\text{IV}$ 06'48	
opposition	2677 Nov 20 23:29	28° $\text{Z}$ 48'59	-2°-24'-29	opposition	2684 Feb 12 01:03	22° $\text{IV}$ 39'58	1°04'37
min. Earth dist.	2677 Nov 20 22:35	28° $\text{Z}$ 49'10	8.22160 AU	min. Earth dist.	2684 Feb 11 22:02	22° $\text{IV}$ 40'35	8.13516 AU
direct	2678 Jan 26 15:20	25° $\text{Z}$ 24'18		direct	2684 Apr 19 18:53	19° $\text{IV}$ 10'24	
	2678 Apr 11 02:14	0° $\text{III}$		evening set	2684 Aug 03 16:45	27° $\text{IV}$ 20'19	
evening set	2678 May 08 16:57	3° $\text{III}$ 17'02					
				conjunction	2684 Aug 21 17:27	29° $\text{IV}$ 38'05	1°06'24



minimum elong	2684 Aug 21 17:25	29°♏38'04	1°06'24	conjunction	2690 Nov 09 11:39	17°♍09'08	2°07'55
max. Earth dist.	2684 Aug 21 21:01	29°♏39'14	10.16783 AU	minimum elong	2690 Nov 09 11:40	17°♍09'09	2°07'56
	2684 Aug 24 13:48	0°♎		max. Earth dist.	2690 Nov 09 11:51	17°♍09'12	10.75874 AU
morning rise	2684 Sep 08 15:08	1°♎54'56		morning rise	2690 Nov 26 07:39	19°♍10'46	
retrograde	2684 Dec 20 04:48	9°♎50'01		retrograde	2691 Mar 05 23:41	26°♍21'56	
opposition	2685 Feb 24 20:35	6°♎24'19	1°38'55	opposition	2691 May 13 15:47	23°♍03'19	2°31'10
min. Earth dist.	2685 Feb 24 18:09	6°♎24'49	8.20580 AU	min. Earth dist.	2691 May 13 16:14	23°♍03'14	8.80623 AU
direct	2685 May 04 01:53	2°♎54'54		direct	2691 Jul 23 10:46	19°♍40'02	
evening set	2685 Aug 18 06:49	11°♎01'17		evening set	2691 Nov 04 18:30	27°♍04'56	
conjunction	2685 Sep 05 03:42	13°♎16'46	1°31'49	conjunction	2691 Nov 21 15:43	29°♍05'53	1°57'00
minimum elong	2685 Sep 05 03:39	13°♎16'45	1°31'49	minimum elong	2691 Nov 21 15:45	29°♍05'54	1°57'00
max. Earth dist.	2685 Sep 05 06:23	13°♎17'37	10.24732 AU	max. Earth dist.	2691 Nov 21 14:39	29°♍05'34	10.84825 AU
morning rise	2685 Sep 22 20:53	15°♎31'06			2691 Nov 29 04:00	0°♏	
retrograde	2686 Jan 02 16:14	23°♎18'18		morning rise	2691 Dec 08 09:35	1°♏05'50	
opposition	2686 Mar 10 11:53	19°♎53'51	2°07'02	retrograde	2692 Mar 17 00:36	8°♏12'20	
min. Earth dist.	2686 Mar 10 10:07	19°♎54'13	8.29359 AU	opposition	2692 May 25 03:14	4°♏54'24	2°14'30
direct	2686 May 18 05:43	16°♎24'55		min. Earth dist.	2692 May 25 04:02	4°♏54'15	8.88886 AU
evening set	2686 Sep 01 12:44	24°♎26'10		direct	2692 Aug 04 02:46	1°♏32'21	
				evening set	2692 Nov 15 18:08	8°♏50'30	
conjunction	2686 Sep 19 05:09	26°♎39'02	1°51'47	conjunction	2692 Dec 02 13:18	10°♏50'01	1°41'17
minimum elong	2686 Sep 19 05:06	26°♎39'01	1°51'46	minimum elong	2692 Dec 02 13:20	10°♏50'01	1°41'18
max. Earth dist.	2686 Sep 19 06:48	26°♎39'33	10.34149 AU	max. Earth dist.	2692 Dec 02 11:56	10°♏49'36	10.92359 AU
morning rise	2686 Oct 06 17:27	28°♎50'35		morning rise	2692 Dec 19 05:36	12°♏48'41	
	2686 Oct 16 05:45	0°♏		retrograde	2693 Mar 28 22:43	19°♏51'47	
retrograde	2687 Jan 15 20:03	6°♏29'41		opposition	2693 Jun 06 11:42	16°♏34'17	1°52'34
opposition	2687 Mar 23 22:28	3°♏06'33	2°27'44	min. Earth dist.	2693 Jun 06 12:16	16°♏34'11	8.95565 AU
min. Earth dist.	2687 Mar 23 20:44	3°♏06'53	8.39346 AU	direct	2693 Aug 16 13:55	13°♏13'22	
	2687 May 11 17:05	30°♏		evening set	2693 Nov 27 11:49	20°♏25'39	
direct	2687 Jun 01 05:13	29°♎38'24					
	2687 Jun 21 15:55	0°♏		conjunction	2693 Dec 14 05:30	22°♏24'03	1°21'37
evening set	2687 Sep 15 09:07	7°♏33'15		minimum elong	2693 Dec 14 05:32	22°♏24'04	1°21'37
conjunction	2687 Oct 02 20:57	9°♏43'22	2°05'30	max. Earth dist.	2693 Dec 14 04:30	22°♏23'45	10.98168 AU
minimum elong	2687 Oct 02 20:55	9°♏43'21	2°05'29	morning rise	2693 Dec 30 20:49	24°♏21'50	
max. Earth dist.	2687 Oct 02 22:16	9°♏43'47	10.44510 AU		2694 Feb 27 16:02	0°♏	
morning rise	2687 Oct 20 04:23	11°♏52'07		retrograde	2694 Apr 09 21:10	1°♏22'55	
retrograde	2688 Jan 28 17:01	19°♏23'18			2694 May 22 06:19	30°♏	
opposition	2688 Apr 05 03:57	16°♏01'26	2°40'21	opposition	2694 Jun 18 17:53	28°♏05'35	1°26'22
min. Earth dist.	2688 Apr 05 02:08	16°♏01'47	8.49989 AU	min. Earth dist.	2694 Jun 18 18:59	28°♏05'23	9.00392 AU
direct	2688 Jun 13 23:00	12°♏34'21		direct	2694 Aug 28 20:00	24°♏45'39	
evening set	2688 Sep 27 19:42	20°♏21'58			2694 Nov 22 05:55	0°♏	
				evening set	2694 Dec 09 01:22	1°♏53'07	
conjunction	2688 Oct 15 03:12	22°♏29'24	2°12'40	conjunction	2694 Dec 25 17:55	3°♏50'49	0°58'52
minimum elong	2688 Oct 15 03:11	22°♏29'24	2°12'39	minimum elong	2694 Dec 25 17:57	3°♏50'49	0°58'51
max. Earth dist.	2688 Oct 15 04:31	22°♏29'48	10.55262 AU	max. Earth dist.	2694 Dec 25 15:57	3°♏50'14	11.02008 AU
morning rise	2688 Nov 01 06:04	24°♏35'27		morning rise	2695 Jan 11 08:56	5°♏48'06	
	2688 Dec 23 05:55	0°♍		retrograde	2695 Apr 21 16:53	12°♏48'33	
retrograde	2689 Feb 09 09:36	1°♍59'10		opposition	2695 Jun 30 22:21	9°♏31'09	0°56'59
	2689 Mar 31 04:19	30°♏		min. Earth dist.	2695 Jul 01 00:41	9°♏30'43	9.03151 AU
opposition	2689 Apr 18 04:23	28°♏38'31	2°44'51	direct	2695 Sep 09 20:22	6°♏11'56	
min. Earth dist.	2689 Apr 18 02:50	28°♏38'50	8.60744 AU	evening set	2695 Dec 20 12:15	13°♏15'59	
direct	2689 Jun 27 08:36	25°♏12'39					
	2689 Sep 15 14:02	0°♍		conjunction	2696 Jan 06 04:02	15°♏13'18	0°33'54
evening set	2689 Oct 10 20:25	2°♍52'37		minimum elong	2696 Jan 06 04:03	15°♏13'18	0°33'53
conjunction	2689 Oct 27 23:56	4°♍57'36	2°13'21	max. Earth dist.	2696 Jan 06 00:32	15°♏12'16	11.03682 AU
minimum elong	2689 Oct 27 23:56	4°♍57'36	2°13'20	morning rise	2696 Jan 22 19:18	17°♏10'27	
max. Earth dist.	2689 Oct 28 01:10	4°♍57'58	10.65878 AU	retrograde	2696 May 02 13:33	24°♏11'54	
morning rise	2689 Nov 13 22:53	7°♍01'15		opposition	2696 Jul 12 02:20	20°♏54'07	0°25'29
retrograde	2690 Feb 21 19:23	14°♍18'13		min. Earth dist.	2696 Jul 12 05:30	20°♏53'32	9.03670 AU
opposition	2690 May 01 00:17	10°♍58'40	2°41'34	direct	2696 Sep 20 21:19	17°♏35'26	
min. Earth dist.	2690 Apr 30 23:45	10°♍58'46	8.71107 AU	evening set	2696 Dec 30 21:55	24°♏37'30	
direct	2690 Jul 10 12:15	7°♍34'06					
	2690 Oct 22 14:09	15°♍		conjunction	2697 Jan 16 13:27	26°♏34'49	0°07'39
evening set	2690 Oct 23 11:37	15°♍06'21		minimum elong	2697 Jan 16 13:27	26°♏34'49	0°07'39
				behind sun begin	2697 Jan 16 07:07	26°♏32'58	



behind sun end	2697 Jan 16 19:47	26°☾36'40			2703 Jan 21 09:34	0°☿	
max. Earth dist.	2697 Jan 16 09:41	26°☾33'44	11.03069 AU	evening set	2703 Mar 12 01:09	5°☿11'37	
morning rise	2697 Feb 02 05:11	28°☾32'12					
	2697 Feb 15 03:35	0°☾		conjunction	2703 Mar 28 23:30	7°☿16'00	-2°-3'-34
desc. node	2697 May 03 19:52	5°☾30'33		minimum elong	2703 Mar 28 23:28	7°☿16'00	2°03'35
retrograde	2697 May 14 14:17	5°☾36'14		max. Earth dist.	2703 Mar 28 21:42	7°☿15'27	10.60137 AU
opposition	2697 Jul 24 06:45	2°☾17'50	0°-7'-3	morning rise	2703 Apr 15 01:54	9°☿21'42	
min. Earth dist.	2697 Jul 24 09:36	2°☾17'18	9.01913 AU	retrograde	2703 Jul 29 17:37	17°☿06'09	
	2697 Aug 27 17:15	30°☾☿		opposition	2703 Oct 07 18:34	13°☿40'18	-2°-38'-28
direct	2697 Oct 02 19:45	28°☾59'29		min. Earth dist.	2703 Oct 07 19:23	13°☿40'08	8.54861 AU
	2697 Nov 07 01:25	0°☾		direct	2703 Dec 14 15:54	10°☿18'56	
evening set	2698 Jan 11 08:19	6°☾01'02		evening set	2704 Mar 23 20:45	17°☿45'45	
conjunction	2698 Jan 28 00:00	7°☾58'42	0°-19'-4	conjunction	2704 Apr 09 22:09	19°☿52'25	-2°-11'-38
minimum elong	2698 Jan 28 00:00	7°☾58'42	0°19'04	minimum elong	2704 Apr 09 22:08	19°☿52'25	2°11'39
max. Earth dist.	2698 Jan 27 20:37	7°☾57'42	11.00217 AU	max. Earth dist.	2704 Apr 09 20:22	19°☿51'52	10.49319 AU
morning rise	2698 Feb 13 16:30	9°☾56'41		morning rise	2704 Apr 27 04:07	22°☿00'32	
	2698 Apr 05 03:29	15°☾		retrograde	2704 Aug 11 08:25	29°☿53'29	
retrograde	2698 May 26 17:15	17°☾04'46		opposition	2704 Oct 20 00:12	26°☿26'23	-2°-44'-54
	2698 Jul 19 08:02	15°☾☿		min. Earth dist.	2704 Oct 20 00:51	26°☿26'15	8.44054 AU
opposition	2698 Aug 05 12:31	13°☾45'28	0°-39'-31	direct	2704 Dec 26 11:10	23°☿03'55	
min. Earth dist.	2698 Aug 05 15:10	13°☾44'59	8.98002 AU		2705 Mar 31 19:46	0°☿	
direct	2698 Oct 14 16:22	10°☾27'11		evening set	2705 Apr 06 01:17	0°☿38'21	
	2698 Dec 31 10:50	15°☾					
evening set	2699 Jan 22 20:55	17°☾29'42		conjunction	2705 Apr 23 06:35	2°☿47'35	-2°-13'-19
conjunction	2699 Feb 08 12:58	19°☾28'04	0°-45'-9	minimum elong	2705 Apr 23 06:35	2°☿47'35	2°13'19
minimum elong	2699 Feb 08 12:56	19°☾28'03	0°45'09	max. Earth dist.	2705 Apr 23 05:21	2°☿47'12	10.38630 AU
max. Earth dist.	2699 Feb 08 09:09	19°☾26'56	10.95291 AU	morning rise	2705 May 10 16:39	4°☿58'18	
morning rise	2699 Feb 25 06:41	21°☾26'58		retrograde	2705 Aug 25 05:58	12°☿59'07	
retrograde	2699 Jun 08 01:16	28°☾40'24		opposition	2705 Nov 02 10:59	9°☿30'58	-2°-43'-3
opposition	2699 Aug 17 20:39	25°☾20'01	-1°-10'-45	min. Earth dist.	2705 Nov 02 11:21	9°☿30'54	8.33627 AU
min. Earth dist.	2699 Aug 17 23:41	25°☾19'27	8.92128 AU	direct	2706 Jan 08 13:02	6°☿07'20	
direct	2699 Oct 26 14:56	22°☾01'31		evening set	2706 Apr 19 15:23	13°☿49'40	
evening set	2700 Feb 03 13:11	29°☾06'25			2706 Apr 28 23:19	15°☿	
	2700 Feb 11 02:12	0°☿		conjunction	2706 May 07 01:14	16°☿01'35	-2°-8'-3
conjunction	2700 Feb 20 05:53	1°☿05'47	-1°-9'-40	minimum elong	2706 May 07 01:16	16°☿01'35	2°08'03
minimum elong	2700 Feb 20 05:51	1°☿05'46	1°09'41	max. Earth dist.	2706 May 07 01:09	16°☿01'33	10.28600 AU
max. Earth dist.	2700 Feb 20 01:26	1°☿04'27	10.88512 AU	morning rise	2706 May 24 15:37	18°☿14'56	
morning rise	2700 Mar 09 01:14	3°☿05'56		retrograde	2706 Sep 08 08:53	26°☿22'28	
retrograde	2700 Jun 20 13:08	10°☿25'56		opposition	2706 Nov 16 02:29	22°☿53'31	-2°-32'-24
opposition	2700 Aug 30 07:54	7°☿04'16	-1°-39'-31	min. Earth dist.	2706 Nov 16 02:07	22°☿53'35	8.24125 AU
min. Earth dist.	2700 Aug 30 11:14	7°☿03'39	8.84544 AU	direct	2707 Jan 21 22:08	19°☿28'43	
direct	2700 Nov 07 15:05	3°☿45'20		evening set	2707 May 03 14:45	27°☿18'48	
evening set	2701 Feb 15 10:26	10°☿53'59		conjunction	2707 May 21 05:30	29°☿33'22	-1°-55'-42
conjunction	2701 Mar 04 04:26	12°☿54'41	-1°-31'-36	minimum elong	2707 May 21 05:33	29°☿33'23	1°55'43
minimum elong	2701 Mar 04 04:24	12°☿54'40	1°31'38	max. Earth dist.	2707 May 21 07:02	29°☿33'52	10.19782 AU
max. Earth dist.	2701 Mar 04 00:46	12°☿53'34	10.80162 AU		2707 May 24 16:32	0°☿	
morning rise	2701 Mar 21 01:41	14°☿56'22		morning rise	2707 Jun 08 00:12	1°☿49'15	
retrograde	2701 Jul 03 06:46	22°☿23'57		retrograde	2707 Sep 22 16:31	10°☿01'53	
opposition	2701 Sep 11 22:56	19°☿00'53	-2°-4'-35	opposition	2707 Nov 29 22:27	6°☿32'25	-2°-12'-58
min. Earth dist.	2701 Sep 12 01:32	19°☿00'24	8.75560 AU	min. Earth dist.	2707 Nov 29 20:45	6°☿32'46	8.16093 AU
direct	2701 Nov 19 20:05	15°☿41'17		direct	2708 Feb 04 13:57	3°☿06'30	
evening set	2702 Feb 27 13:58	22°☿54'57		evening set	2708 May 16 22:41	11°☿03'44	
conjunction	2702 Mar 16 09:53	24°☿57'20	-1°-49'-54	conjunction	2708 Jun 03 18:11	13°☿20'43	-1°-36'-35
minimum elong	2702 Mar 16 09:51	24°☿57'20	1°49'56	minimum elong	2708 Jun 03 18:14	13°☿20'45	1°36'36
max. Earth dist.	2702 Mar 16 07:30	24°☿56'37	10.70574 AU	max. Earth dist.	2708 Jun 03 21:00	13°☿21'38	10.12706 AU
morning rise	2702 Apr 02 09:26	27°☿00'53		morning rise	2708 Jun 21 16:54	15°☿38'48	
	2702 Apr 28 18:00	0°☿		retrograde	2708 Oct 06 03:28	23°☿54'31	
retrograde	2702 Jul 16 09:09	4°☿36'45		opposition	2708 Dec 12 21:56	20°☿24'53	-1°-45'-28
opposition	2702 Sep 24 18:20	1°☿12'15	-2°-24'-39	min. Earth dist.	2708 Dec 12 19:16	20°☿25'26	8.10031 AU
min. Earth dist.	2702 Sep 24 19:51	1°☿11'58	8.65526 AU	direct	2709 Feb 17 11:11	16°☿57'57	
	2702 Oct 10 19:06	30°☿☿		evening set	2709 May 31 14:20	25°☿01'19	
direct	2702 Dec 02 03:44	27°☿51'51		conjunction	2709 Jun 18 13:57	27°☿20'17	-1°-11'-35



minimum elong	2709 Jun 18 14:00	27°II20'18	1°11'35	opposition	2715 Mar 05 20:55	14°II12'39	1°55'17
max. Earth dist.	2709 Jun 18 17:26	27°II21'25	10.07823 AU	min. Earth dist.	2715 Mar 05 17:32	14°II13'20	8.26127 AU
morning rise	2709 Jul 06 15:52	29°II40'00		direct	2715 May 13 08:25	10°II44'03	
	2709 Jul 09 07:09	0°II		evening set	2715 Aug 27 15:31	18°II47'43	
retrograde	2709 Oct 20 16:22	7°II56'28					
opposition	2709 Dec 26 23:38	4°II27'04	-1°-11'-21	conjunction	2715 Sep 14 10:07	21°II01'45	1°43'33
min. Earth dist.	2709 Dec 26 20:35	4°II27'42	8.06342 AU	minimum elong	2715 Sep 14 10:04	21°II01'44	1°43'33
direct	2710 Mar 03 13:09	0°II59'13		max. Earth dist.	2715 Sep 14 13:27	21°II02'48	10.30726 AU
evening set	2710 Jun 15 11:42	9°II07'24		morning rise	2715 Oct 02 00:31	23°II14'30	
					2715 Dec 09 23:32	0°II	
conjunction	2710 Jul 03 14:16	11°II27'36	0°-42'-6	retrograde	2716 Jan 11 11:56	0°II57'17	
minimum elong	2710 Jul 03 14:18	11°II27'37	0°42'07		2716 Feb 13 09:31	30°RII	
max. Earth dist.	2710 Jul 03 18:02	11°II28'50	10.05459 AU	opposition	2716 Mar 18 09:49	27°II34'04	2°19'22
morning rise	2710 Jul 21 18:05	13°II48'12		min. Earth dist.	2716 Mar 18 07:35	27°II34'31	8.35681 AU
retrograde	2710 Nov 04 04:04	22°II03'06		direct	2716 May 26 09:41	24°II06'06	
opposition	2711 Jan 10 02:32	18°II34'17	0°-32'-43		2716 Aug 23 08:27	0°II	
min. Earth dist.	2711 Jan 09 23:28	18°II34'55	8.05288 AU	evening set	2716 Sep 09 16:47	2°II03'56	
direct	2711 Mar 17 20:47	15°II05'45					
evening set	2711 Jun 30 12:09	23°II16'59		conjunction	2716 Sep 27 06:48	4°II15'16	2°00'06
				minimum elong	2716 Sep 27 06:45	4°II15'15	2°00'05
conjunction	2711 Jul 18 16:08	25°II37'33	0°-10'-2	max. Earth dist.	2716 Sep 27 08:43	4°II15'52	10.40625 AU
minimum elong	2711 Jul 18 16:09	25°II37'33	0°10'03	morning rise	2716 Oct 14 16:14	6°II25'13	
behind sun begin	2711 Jul 18 10:17	25°II35'40		retrograde	2717 Jan 23 12:46	14°II00'02	
behind sun end	2711 Jul 18 22:00	25°II39'26		opposition	2717 Mar 31 18:00	10°II38'06	2°35'36
max. Earth dist.	2711 Jul 18 19:57	25°II38'46	10.05784 AU	min. Earth dist.	2717 Mar 31 17:15	10°II38'15	8.45867 AU
morning rise	2711 Aug 05 20:14	27°II58'08		direct	2717 Jun 09 05:56	7°II10'59	
	2711 Aug 22 06:30	0°II		evening set	2717 Sep 23 08:25	15°II02'08	
asc. node	2711 Nov 11 22:59	6°II06'58					
retrograde	2711 Nov 18 11:51	6°II09'21		conjunction	2717 Oct 10 17:45	17°II10'45	2°10'10
opposition	2712 Jan 24 05:02	2°II41'22	0°07'52	minimum elong	2717 Oct 10 17:43	17°II10'45	2°10'09
min. Earth dist.	2712 Jan 24 01:59	2°II42'00	8.06952 AU	max. Earth dist.	2717 Oct 10 17:58	17°II10'49	10.50929 AU
	2712 Mar 01 15:34	30°RII		morning rise	2717 Oct 27 22:33	19°II18'00	
direct	2712 Mar 31 07:17	29°II12'25		retrograde	2718 Feb 05 07:32	26°II45'16	
	2712 Apr 29 20:23	0°II		opposition	2718 Apr 13 21:17	23°II24'30	2°43'40
evening set	2712 Jul 14 13:15	7°II24'44		min. Earth dist.	2718 Apr 13 21:25	23°II24'29	8.56238 AU
				direct	2718 Jun 22 19:56	19°II58'24	
conjunction	2712 Aug 01 17:01	9°II44'45	0°22'35	evening set	2718 Oct 06 14:05	27°II42'12	
minimum elong	2712 Aug 01 17:00	9°II44'45	0°22'35				
max. Earth dist.	2712 Aug 01 20:53	9°II46'00	10.08778 AU	conjunction	2718 Oct 23 19:11	29°II48'18	2°13'40
morning rise	2712 Aug 19 19:41	12°II04'23		minimum elong	2718 Oct 23 19:11	29°II48'18	2°13'40
	2712 Sep 13 00:01	15°II		max. Earth dist.	2718 Oct 23 18:14	29°II48'01	10.61224 AU
retrograde	2712 Dec 01 14:35	20°II10'03			2718 Oct 25 09:15	0°II	
opposition	2713 Feb 06 05:38	16°II43'08	0°47'42	morning rise	2718 Nov 09 19:58	1°II53'04	
min. Earth dist.	2713 Feb 06 02:19	16°II43'49	8.11219 AU	retrograde	2719 Feb 17 19:07	9°II13'22	
	2713 Feb 28 04:05	15°RII		opposition	2719 Apr 26 19:39	5°II53'35	2°43'45
direct	2713 Apr 14 18:19	13°II14'02		min. Earth dist.	2719 Apr 26 19:57	5°II53'32	8.66370 AU
	2713 May 29 17:46	15°II		direct	2719 Jul 06 04:27	2°II28'35	
evening set	2713 Jul 29 12:00	21°II25'22		evening set	2719 Oct 19 09:57	10°II04'45	
conjunction	2713 Aug 16 13:56	23°II44'00	0°53'34	conjunction	2719 Nov 05 11:32	12°II08'35	2°10'52
minimum elong	2713 Aug 16 13:54	23°II43'59	0°53'33	minimum elong	2719 Nov 05 11:33	12°II08'36	2°10'52
max. Earth dist.	2713 Aug 16 17:52	23°II45'16	10.14225 AU	max. Earth dist.	2719 Nov 05 10:21	12°II08'14	10.71073 AU
morning rise	2713 Sep 03 13:32	26°II01'51		morning rise	2719 Nov 22 08:56	14°II11'12	
	2713 Oct 07 11:19	0°II			2719 Nov 29 06:26	15°II	
retrograde	2713 Dec 15 11:57	4°II00'36		retrograde	2720 Mar 01 02:36	21°II25'21	
opposition	2714 Feb 20 03:16	0°II34'51	1°24'13	opposition	2720 May 08 13:29	18°II06'21	2°36'23
min. Earth dist.	2714 Feb 19 23:43	0°II35'34	8.17772 AU	min. Earth dist.	2720 May 08 13:48	18°II06'18	8.75817 AU
	2714 Feb 27 07:08	30°RII			2720 Jun 29 06:30	15°RII	
direct	2714 Apr 29 02:53	27°II05'52		direct	2720 Jul 18 06:34	14°II42'27	
	2714 Jun 27 03:48	0°II			2720 Aug 06 02:40	15°II	
evening set	2714 Aug 13 05:26	5°II14'12		evening set	2720 Oct 30 20:59	22°II11'08	
conjunction	2714 Aug 31 04:09	7°II30'45	1°21'03	conjunction	2720 Nov 16 19:37	24°II13'01	2°02'15
minimum elong	2714 Aug 31 04:06	7°II30'44	1°21'02	minimum elong	2720 Nov 16 19:39	24°II13'02	2°02'15
max. Earth dist.	2714 Aug 31 08:03	7°II32'00	10.21724 AU	max. Earth dist.	2720 Nov 16 18:38	24°II12'43	10.80043 AU
morning rise	2714 Sep 17 23:28	9°II46'13		morning rise	2720 Dec 03 14:19	26°II13'48	
retrograde	2714 Dec 29 03:53	17°II37'10			2721 Jan 07 05:58	0°II	



retrograde	2721 Mar 13 06:57	3°♂22'48		max. Earth dist.	2727 Jan 24 09:03	3°≈21'24	10.99857 AU
opposition	2721 May 21 03:14	0°♂04'24	2°22'21	morning rise	2727 Feb 10 04:44	5°≈20'15	
min. Earth dist.	2721 May 21 04:18	0°♂04'12	8.84190 AU	retrograde	2727 May 22 20:53	12°≈26'51	
	2721 May 22 02:34	30°♂		opposition	2727 Aug 01 16:34	9°≈07'28	0°-25'-50
direct	2721 Jul 31 00:46	26°♂41'34		min. Earth dist.	2727 Aug 01 19:12	9°≈06'59	8.98326 AU
	2721 Oct 05 02:40	0°♂		direct	2727 Oct 10 23:54	5°≈48'42	
evening set	2721 Nov 12 00:11	4°♂03'12		evening set	2728 Jan 19 08:26	12°≈51'07	
conjunction	2721 Nov 28 20:22	6°♂03'30	1°48'31	conjunction	2728 Feb 05 00:16	14°≈49'17	0°-34'-13
minimum elong	2721 Nov 28 20:25	6°♂03'31	1°48'32	minimum elong	2728 Feb 05 00:15	14°≈49'16	0°34'13
max. Earth dist.	2721 Nov 28 18:41	6°♂03'00	10.87776 AU	max. Earth dist.	2728 Feb 04 21:16	14°≈48'23	10.96312 AU
morning rise	2721 Dec 15 13:17	8°♂02'53			2728 Feb 06 12:18	15°≈	
retrograde	2722 Mar 25 05:33	15°♂07'55		morning rise	2728 Feb 21 17:35	16°≈47'52	
opposition	2722 Jun 02 13:34	11°♂49'53	2°02'34	retrograde	2728 Jun 03 03:15	23°≈59'10	
min. Earth dist.	2722 Jun 02 15:37	11°♂49'30	8.91170 AU	opposition	2728 Aug 12 23:43	20°≈38'56	0°-57'-44
direct	2722 Aug 12 14:05	8°♂28'01		min. Earth dist.	2728 Aug 13 01:43	20°≈38'34	8.93836 AU
evening set	2722 Nov 23 20:41	15°♂43'24		direct	2728 Oct 21 23:24	17°≈20'16	
				evening set	2729 Jan 29 22:52	24°≈24'17	
conjunction	2722 Dec 10 15:00	17°♂42'28	1°30'27	conjunction	2729 Feb 15 15:22	26°≈23'16	0°-59'-31
minimum elong	2722 Dec 10 15:02	17°♂42'28	1°30'27	minimum elong	2729 Feb 15 15:20	26°≈23'15	0°59'31
max. Earth dist.	2722 Dec 10 12:12	17°♂41'37	10.93979 AU	max. Earth dist.	2729 Feb 15 13:30	26°≈22'42	10.90899 AU
morning rise	2722 Dec 27 06:56	19°♂40'49		morning rise	2729 Mar 04 09:53	28°≈22'54	
retrograde	2723 Apr 06 02:51	26°♂43'15			2729 Mar 18 13:55	0°♂	
opposition	2723 Jun 14 21:00	23°♂25'21	1°38'03	retrograde	2729 Jun 15 14:02	5°♂40'10	
min. Earth dist.	2723 Jun 14 23:24	23°♂24'54	8.96489 AU	opposition	2729 Aug 25 09:37	2°♂18'54	-1°-27'-41
direct	2723 Aug 24 23:35	20°♂04'22		min. Earth dist.	2729 Aug 25 10:39	2°♂18'43	8.87581 AU
evening set	2723 Dec 05 12:13	27°♂14'32			2729 Sep 28 14:54	30°♂≈	
conjunction	2723 Dec 22 05:17	29°♂12'43	1°08'54	direct	2729 Nov 02 21:58	29°≈00'08	
minimum elong	2723 Dec 22 05:19	29°♂12'44	1°08'53		2729 Dec 07 10:07	0°♂	
max. Earth dist.	2723 Dec 22 02:24	29°♂11'52	10.98415 AU	evening set	2730 Feb 10 17:59	6°♂07'11	
	2723 Dec 28 20:42	0°♂		conjunction	2730 Feb 27 11:26	8°♂07'17	-1°-22'-39
morning rise	2724 Jan 07 20:39	1°♂10'25		minimum elong	2730 Feb 27 11:23	8°♂07'16	1°22'40
retrograde	2724 Apr 16 23:35	8°♂11'40		max. Earth dist.	2730 Feb 27 09:43	8°♂06'46	10.83825 AU
opposition	2724 Jun 26 02:20	4°♂53'40	1°09'52	morning rise	2730 Mar 16 07:40	10°♂08'17	
min. Earth dist.	2724 Jun 26 04:15	4°♂53'19	8.99949 AU	retrograde	2730 Jun 28 06:16	17°♂32'32	
direct	2724 Sep 05 03:39	1°♂33'29		opposition	2730 Sep 06 22:53	14°♂10'11	-1°-54'-25
evening set	2724 Dec 16 00:19	8°♂39'38		min. Earth dist.	2730 Sep 06 23:52	14°♂10'00	8.79807 AU
conjunction	2725 Jan 01 16:39	10°♂37'19	0°44'45	direct	2730 Nov 14 23:49	10°♂51'05	
minimum elong	2725 Jan 01 16:40	10°♂37'20	0°44'44	evening set	2731 Feb 22 18:52	18°♂02'27	
max. Earth dist.	2725 Jan 01 14:22	10°♂36'39	11.00921 AU	conjunction	2731 Mar 11 13:44	20°♂04'02	-1°-42'-34
morning rise	2725 Jan 18 07:48	12°♂34'43		minimum elong	2731 Mar 11 13:41	20°♂04'01	1°42'36
retrograde	2725 Apr 28 21:39	19°♂36'17		max. Earth dist.	2731 Mar 11 11:43	20°♂03'25	10.75379 AU
opposition	2725 Jul 08 06:52	16°♂18'01	0°39'06	morning rise	2731 Mar 28 12:14	22°♂06'42	
min. Earth dist.	2725 Jul 08 08:33	16°♂17'43	9.01432 AU	retrograde	2731 Jul 11 05:21	29°♂38'45	
direct	2725 Sep 17 04:43	12°♂58'29		opposition	2731 Sep 19 16:27	26°♂15'14	-2°-16'-41
evening set	2725 Dec 27 10:34	20°♂01'56		min. Earth dist.	2731 Sep 19 17:33	26°♂15'01	8.70825 AU
conjunction	2726 Jan 13 02:24	21°♂59'27	0°18'54	direct	2731 Nov 27 05:16	22°♂55'35	
minimum elong	2726 Jan 13 02:24	21°♂59'28	0°18'53		2732 Mar 04 09:01	0°♀	
max. Earth dist.	2726 Jan 12 23:58	21°♂58'45	11.01408 AU	evening set	2732 Mar 06 02:34	0°♀12'26	
morning rise	2726 Jan 29 17:54	23°♂56'55		conjunction	2732 Mar 22 23:33	2°♀15'47	-1°-58'-17
	2726 Apr 05 13:07	0°≈		minimum elong	2732 Mar 22 23:31	2°♀15'46	1°58'18
retrograde	2726 May 10 20:48	1°≈00'17		max. Earth dist.	2732 Mar 22 22:04	2°♀15'20	10.65902 AU
	2726 Jun 15 21:39	30°♂♂		morning rise	2732 Apr 09 00:42	4°♀20'25	
opposition	2726 Jul 20 11:23	27°♂41'33	0°06'49	retrograde	2732 Jul 23 09:10	12°♀00'45	
min. Earth dist.	2726 Jul 20 13:39	27°♂41'08	9.00886 AU	opposition	2732 Oct 01 14:42	8°♀36'02	-2°-33'-13
direct	2726 Sep 29 02:26	24°♂22'30		min. Earth dist.	2732 Oct 01 15:28	8°♀35'53	8.61009 AU
desc. node	2726 Oct 07 02:28	24°♂25'39		direct	2732 Dec 08 16:38	5°♀15'39	
	2726 Dec 26 10:08	0°≈		evening set	2733 Mar 18 18:17	12°♀38'54	
evening set	2727 Jan 07 20:49	1°≈24'42		conjunction	2733 Apr 04 18:12	14°♀44'22	-2°-8'-47
conjunction	2727 Jan 24 12:24	3°≈22'22	0°-7'-48	minimum elong	2733 Apr 04 18:11	14°♀44'21	2°08'48
minimum elong	2727 Jan 24 12:24	3°≈22'22	0°07'48	max. Earth dist.	2733 Apr 04 18:08	14°♀44'20	10.55796 AU
behind sun begin	2727 Jan 24 06:06	3°≈20'31		morning rise	2733 Apr 21 22:28	16°♀51'12	
behind sun end	2727 Jan 24 18:42	3°≈24'12					



retrograde	2733 Aug 05 20:39	24° $\Upsilon$ 39'52		minimum elong	2739 Jun 27 09:25	5° $\Theta$ 32'01	0°55'19
opposition	2733 Oct 14 17:43	21° $\Upsilon$ 13'57	-2°-42'-50	max. Earth dist.	2739 Jun 27 11:52	5° $\Theta$ 32'49	10.07930 AU
min. Earth dist.	2733 Oct 14 17:30	21° $\Upsilon$ 13'59	8.50771 AU	morning rise	2739 Jul 15 12:24	7° $\Theta$ 52'00	
direct	2733 Dec 21 09:54	17° $\Upsilon$ 52'40		retrograde	2739 Oct 29 03:27	16° $\Theta$ 06'44	
evening set	2734 Mar 31 18:43	25° $\Upsilon$ 22'59		opposition	2740 Jan 04 07:05	12° $\Theta$ 37'49	0°-49'-56
				min. Earth dist.	2740 Jan 04 04:40	12° $\Theta$ 38'19	8.06962 AU
conjunction	2734 Apr 17 22:15	27° $\Upsilon$ 30'50	-2°-13'-13	direct	2740 Mar 11 00:49	9° $\Theta$ 09'44	
minimum elong	2734 Apr 17 22:15	27° $\Upsilon$ 30'50	2°13'14	evening set	2740 Jun 23 06:19	17° $\Theta$ 18'38	
max. Earth dist.	2734 Apr 17 22:55	27° $\Upsilon$ 31'02	10.45487 AU				
morning rise	2734 May 05 06:12	29° $\Upsilon$ 40'06		conjunction	2740 Jul 11 09:54	19° $\Theta$ 38'53	0°-24'-15
	2734 May 07 23:26	0° $\Upsilon$		minimum elong	2740 Jul 11 09:55	19° $\Theta$ 38'53	0°24'16
retrograde	2734 Aug 19 16:13	7° $\Upsilon$ 36'40		max. Earth dist.	2740 Jul 11 13:19	19° $\Theta$ 39'59	10.06620 AU
opposition	2734 Oct 28 01:46	4° $\Upsilon$ 09'39	-2°-44'-33	morning rise	2740 Jul 29 13:55	21° $\Theta$ 59'18	
min. Earth dist.	2734 Oct 28 00:55	4° $\Upsilon$ 09'49	8.40527 AU		2740 Oct 28 06:03	0° $\Omega$	
direct	2735 Jan 03 07:32	0° $\Upsilon$ 47'18		retrograde	2740 Nov 11 12:05	0° $\Omega$ 11'22	
evening set	2735 Apr 14 04:14	8° $\Upsilon$ 25'07			2740 Nov 25 18:38	30° $\Upsilon$	
				opposition	2741 Jan 17 08:52	26° $\Theta$ 42'57	0°-10'-2
conjunction	2735 May 01 11:53	10° $\Upsilon$ 35'31	-2°-10'-58	min. Earth dist.	2741 Jan 17 05:52	26° $\Theta$ 43'34	8.06952 AU
minimum elong	2735 May 01 11:54	10° $\Upsilon$ 35'32	2°10'58	direct	2741 Mar 25 08:44	23° $\Theta$ 14'07	
max. Earth dist.	2735 May 01 12:27	10° $\Upsilon$ 35'42	10.35401 AU	asc. node	2741 Apr 21 05:25	23° $\Theta$ 53'45	
morning rise	2735 May 19 00:01	12° $\Upsilon$ 47'22			2741 Jun 26 21:09	0° $\Omega$	
	2735 Jun 06 10:46	15° $\Upsilon$		evening set	2741 Jul 08 06:31	1° $\Omega$ 25'05	
retrograde	2735 Sep 02 17:14	20° $\Upsilon$ 50'58					
opposition	2735 Nov 10 14:41	17° $\Upsilon$ 23'04	-2°-37'-41	conjunction	2741 Jul 26 10:40	3° $\Omega$ 45'16	0°08'18
min. Earth dist.	2735 Nov 10 13:48	17° $\Upsilon$ 23'14	8.30720 AU	minimum elong	2741 Jul 26 10:40	3° $\Omega$ 45'15	0°08'18
	2735 Dec 13 17:12	15° $\Upsilon$		behind sun begin	2741 Jul 26 04:13	3° $\Omega$ 43'11	
direct	2736 Jan 16 11:57	13° $\Upsilon$ 59'31		behind sun end	2741 Jul 26 17:07	3° $\Omega$ 47'19	
	2736 Feb 18 20:38	15° $\Upsilon$		max. Earth dist.	2741 Jul 26 14:24	3° $\Omega$ 46'26	10.07939 AU
evening set	2736 Apr 26 22:55	21° $\Upsilon$ 45'04		morning rise	2741 Aug 13 13:56	6° $\Omega$ 05'11	
				retrograde	2741 Nov 25 17:03	14° $\Omega$ 12'39	
conjunction	2736 May 14 11:12	23° $\Upsilon$ 58'07	-2°-1'-40	opposition	2742 Jan 31 09:28	10° $\Omega$ 45'00	0°30'18
minimum elong	2736 May 14 11:14	23° $\Upsilon$ 58'08	2°01'40	min. Earth dist.	2742 Jan 31 06:37	10° $\Omega$ 45'36	8.09557 AU
max. Earth dist.	2736 May 14 11:24	23° $\Upsilon$ 58'11	10.26035 AU	direct	2742 Apr 08 17:39	7° $\Omega$ 15'41	
morning rise	2736 Jun 01 03:51	26° $\Upsilon$ 12'33			2742 Jul 19 16:15	15° $\Omega$	
	2736 Jul 03 15:17	0° $\Upsilon$		evening set	2742 Jul 23 05:39	15° $\Omega$ 26'49	
retrograde	2736 Sep 15 21:55	4° $\Upsilon$ 21'57					
opposition	2736 Nov 23 08:12	0° $\Upsilon$ 53'22	-2°-22'-3	conjunction	2742 Aug 10 08:36	17° $\Omega$ 46'01	0°40'06
min. Earth dist.	2736 Nov 23 07:32	0° $\Upsilon$ 53'30	8.21912 AU	minimum elong	2742 Aug 10 08:34	17° $\Omega$ 46'01	0°40'06
	2736 Dec 04 11:21	30° $\Upsilon$		max. Earth dist.	2742 Aug 10 11:57	17° $\Omega$ 47'06	10.11786 AU
direct	2737 Jan 29 00:36	27° $\Upsilon$ 28'36		morning rise	2742 Aug 28 09:33	20° $\Omega$ 04'36	
	2737 Mar 23 15:49	0° $\Upsilon$		retrograde	2742 Dec 09 17:09	28° $\Omega$ 05'57	
evening set	2737 May 11 02:29	5° $\Upsilon$ 21'35		opposition	2743 Feb 14 07:50	24° $\Omega$ 39'18	1°08'28
				min. Earth dist.	2743 Feb 14 05:29	24° $\Omega$ 39'47	8.14596 AU
conjunction	2737 May 28 19:36	7° $\Upsilon$ 37'11	-1°-45'-27	direct	2743 Apr 23 02:00	21° $\Omega$ 09'49	
minimum elong	2737 May 28 19:40	7° $\Upsilon$ 37'12	1°45'27	evening set	2743 Aug 07 00:45	29° $\Omega$ 19'05	
max. Earth dist.	2737 May 28 20:05	7° $\Upsilon$ 37'20	10.17984 AU		2743 Aug 12 10:29	0° $\Upsilon$	
morning rise	2737 Jun 15 16:36	9° $\Upsilon$ 54'00					
retrograde	2737 Sep 30 06:12	18° $\Upsilon$ 07'22		conjunction	2743 Aug 25 01:01	1° $\Upsilon$ 36'35	1°09'16
opposition	2737 Dec 07 05:31	14° $\Upsilon$ 38'24	-1°-58'-1	minimum elong	2743 Aug 25 00:58	1° $\Upsilon$ 36'34	1°09'16
min. Earth dist.	2737 Dec 07 04:43	14° $\Upsilon$ 38'33	8.14704 AU	max. Earth dist.	2743 Aug 25 03:40	1° $\Upsilon$ 37'26	10.17901 AU
direct	2738 Feb 11 19:38	11° $\Upsilon$ 12'24		morning rise	2743 Sep 11 22:23	3° $\Upsilon$ 53'09	
evening set	2738 May 25 14:06	19° $\Upsilon$ 12'01		retrograde	2743 Dec 23 10:47	11° $\Upsilon$ 47'17	
				opposition	2744 Feb 28 02:43	8° $\Upsilon$ 21'46	1°42'07
conjunction	2738 Jun 12 11:44	21° $\Upsilon$ 29'50	-1°-22'-56	min. Earth dist.	2744 Feb 28 00:49	8° $\Upsilon$ 22'09	8.21730 AU
minimum elong	2738 Jun 12 11:47	21° $\Upsilon$ 29'51	1°22'56	direct	2744 May 06 09:18	4° $\Upsilon$ 52'26	
max. Earth dist.	2738 Jun 12 13:08	21° $\Upsilon$ 30'17	10.11804 AU	evening set	2744 Aug 20 13:49	12° $\Upsilon$ 58'07	
morning rise	2738 Jun 30 12:19	23° $\Upsilon$ 48'34					
	2738 Aug 26 20:36	0° $\Upsilon$		conjunction	2744 Sep 07 10:18	15° $\Upsilon$ 13'19	1°34'06
retrograde	2738 Oct 14 16:33	2° $\Theta$ 03'45		minimum elong	2744 Sep 07 10:15	15° $\Upsilon$ 13'18	1°34'06
	2738 Dec 03 08:36	30° $\Upsilon$		max. Earth dist.	2744 Sep 07 12:09	15° $\Upsilon$ 13'54	10.25886 AU
opposition	2738 Dec 21 05:30	28° $\Upsilon$ 34'40	-1°-26'-42	morning rise	2744 Sep 25 03:10	17° $\Upsilon$ 27'22	
min. Earth dist.	2738 Dec 21 03:58	28° $\Upsilon$ 34'59	8.09601 AU	retrograde	2745 Jan 04 20:01	25° $\Upsilon$ 13'40	
direct	2739 Feb 25 19:47	25° $\Upsilon$ 07'33		opposition	2745 Mar 12 17:14	21° $\Upsilon$ 49'22	2°09'27
	2739 May 13 16:32	0° $\Upsilon$		min. Earth dist.	2745 Mar 12 15:29	21° $\Upsilon$ 49'43	8.30507 AU
evening set	2739 Jun 09 08:06	3° $\Theta$ 12'36		direct	2745 May 20 13:23	18° $\Upsilon$ 20'32	
				evening set	2745 Sep 03 18:44	26° $\Upsilon$ 21'03	
conjunction	2739 Jun 27 09:22	5° $\Theta$ 32'00	0°-55'-19				



conjunction	2745 Sep 21 10:50	28° $\mathring{M}$ 33'38	1°53'24	conjunction	2751 Dec 05 15:10	12° $\mathring{Z}$ 37'35	1°39'10
minimum elong	2745 Sep 21 10:47	28° $\mathring{M}$ 33'37	1°53'23	minimum elong	2751 Dec 05 15:12	12° $\mathring{Z}$ 37'35	1°39'10
max. Earth dist.	2745 Sep 21 12:16	28° $\mathring{M}$ 34'05	10.35265 AU	max. Earth dist.	2751 Dec 05 14:10	12° $\mathring{Z}$ 37'17	10.92272 AU
	2745 Oct 02 21:56	0° $\mathring{A}$		morning rise	2751 Dec 22 07:25	14° $\mathring{Z}$ 36'16	
morning rise	2745 Oct 08 22:44	0° $\mathring{A}$ 44'54		retrograde	2752 Mar 31 02:33	21° $\mathring{Z}$ 39'30	
retrograde	2746 Jan 17 23:33	8° $\mathring{A}$ 23'13		opposition	2752 Jun 08 14:35	18° $\mathring{Z}$ 21'57	1°49'43
opposition	2746 Mar 26 03:08	5° $\mathring{A}$ 00'11	2°29'16	min. Earth dist.	2752 Jun 08 15:26	18° $\mathring{Z}$ 21'48	8.95345 AU
min. Earth dist.	2746 Mar 26 01:07	5° $\mathring{A}$ 00'35	8.40417 AU	direct	2752 Aug 18 16:34	15° $\mathring{Z}$ 01'02	
direct	2746 Jun 03 11:38	1° $\mathring{A}$ 32'09		evening set	2752 Nov 29 13:40	22° $\mathring{Z}$ 13'17	
evening set	2746 Sep 17 14:06	9° $\mathring{A}$ 26'14					
conjunction	2746 Oct 05 01:41	11° $\mathring{A}$ 36'07	2°06'25	conjunction	2752 Dec 16 07:19	24° $\mathring{Z}$ 11'45	1°19'06
minimum elong	2746 Oct 05 01:39	11° $\mathring{A}$ 36'06	2°06'24	minimum elong	2752 Dec 16 07:21	24° $\mathring{Z}$ 11'45	1°19'06
max. Earth dist.	2746 Oct 05 03:22	11° $\mathring{A}$ 36'38	10.45518 AU	max. Earth dist.	2752 Dec 16 05:51	24° $\mathring{Z}$ 11'19	10.97826 AU
morning rise	2746 Oct 22 08:39	13° $\mathring{A}$ 44'36		morning rise	2753 Jan 01 22:43	26° $\mathring{Z}$ 09'36	
retrograde	2747 Jan 30 21:55	21° $\mathring{A}$ 15'06			2753 Feb 07 01:51	0° $\mathring{Z}$	
opposition	2747 Apr 08 08:08	17° $\mathring{A}$ 53'18	2°41'02	retrograde	2753 Apr 11 23:32	3° $\mathring{Z}$ 10'57	
min. Earth dist.	2747 Apr 08 06:26	17° $\mathring{A}$ 53'38	8.50926 AU		2753 Jun 19 10:17	30° $\mathring{R}$ $\mathring{Z}$	
direct	2747 Jun 17 02:37	14° $\mathring{A}$ 26'19		opposition	2753 Jun 20 20:59	29° $\mathring{Z}$ 53'34	1°23'06
evening set	2747 Sep 30 23:45	22° $\mathring{A}$ 13'12		min. Earth dist.	2753 Jun 20 22:55	29° $\mathring{Z}$ 53'13	8.99935 AU
				direct	2753 Aug 30 21:14	26° $\mathring{Z}$ 33'36	
conjunction	2747 Oct 18 06:59	24° $\mathring{A}$ 20'27	2°12'52		2753 Nov 06 12:53	0° $\mathring{Z}$	
minimum elong	2747 Oct 18 06:58	24° $\mathring{A}$ 20'27	2°12'52	evening set	2753 Dec 11 03:21	3° $\mathring{Z}$ 41'15	
max. Earth dist.	2747 Oct 18 08:22	24° $\mathring{A}$ 20'53	10.56113 AU	conjunction	2753 Dec 27 19:50	5° $\mathring{Z}$ 39'00	0°56'03
morning rise	2747 Nov 04 09:30	26° $\mathring{A}$ 26'19		minimum elong	2753 Dec 27 19:52	5° $\mathring{Z}$ 39'00	0°56'02
	2747 Dec 06 00:28	0° $\mathring{M}$		max. Earth dist.	2753 Dec 27 17:02	5° $\mathring{Z}$ 38'10	11.01454 AU
retrograde	2748 Feb 12 12:21	3° $\mathring{M}$ 49'27		morning rise	2754 Jan 13 11:03	7° $\mathring{Z}$ 36'24	
opposition	2748 Apr 20 08:04	0° $\mathring{M}$ 28'52	2°44'40	retrograde	2754 Apr 23 19:29	14° $\mathring{Z}$ 37'20	
min. Earth dist.	2748 Apr 20 07:22	0° $\mathring{M}$ 29'00	8.61505 AU	opposition	2754 Jul 03 01:53	11° $\mathring{Z}$ 19'50	0°53'24
	2748 Apr 26 13:15	30° $\mathring{R}$ $\mathring{A}$		min. Earth dist.	2754 Jul 03 04:25	11° $\mathring{Z}$ 19'22	9.02510 AU
direct	2748 Jun 29 12:22	27° $\mathring{A}$ 03'02		direct	2754 Sep 12 00:21	8° $\mathring{Z}$ 00'35	
	2748 Aug 30 01:12	0° $\mathring{M}$		evening set	2754 Dec 22 14:22	15° $\mathring{Z}$ 04'54	
evening set	2748 Oct 12 23:43	4° $\mathring{M}$ 42'25					
conjunction	2748 Oct 30 02:56	6° $\mathring{M}$ 47'13	2°12'53	conjunction	2755 Jan 08 06:16	17° $\mathring{Z}$ 02'19	0°30'52
minimum elong	2748 Oct 30 02:57	6° $\mathring{M}$ 47'14	2°12'53	minimum elong	2755 Jan 08 06:17	17° $\mathring{Z}$ 02'19	0°30'52
max. Earth dist.	2748 Oct 30 03:15	6° $\mathring{M}$ 47'19	10.66531 AU	max. Earth dist.	2755 Jan 08 03:03	17° $\mathring{Z}$ 01'22	11.02973 AU
morning rise	2748 Nov 16 01:46	8° $\mathring{M}$ 50'45		morning rise	2755 Jan 24 21:40	18° $\mathring{Z}$ 59'36	
	2749 Jan 18 20:34	15° $\mathring{M}$		retrograde	2755 May 05 18:00	26° $\mathring{Z}$ 01'38	
retrograde	2749 Feb 23 21:15	16° $\mathring{M}$ 07'17		opposition	2755 Jul 15 06:12	22° $\mathring{Z}$ 43'44	0°21'43
	2749 Apr 01 17:05	15° $\mathring{R}$ $\mathring{M}$		min. Earth dist.	2755 Jul 15 08:41	22° $\mathring{Z}$ 43'16	9.02899 AU
opposition	2749 May 03 03:32	12° $\mathring{M}$ 47'47	2°40'36	direct	2755 Sep 24 00:44	19° $\mathring{Z}$ 25'01	
min. Earth dist.	2749 May 03 03:55	12° $\mathring{M}$ 47'43	8.71653 AU	evening set	2756 Jan 03 00:32	26° $\mathring{Z}$ 27'24	
direct	2749 Jul 12 16:44	9° $\mathring{M}$ 23'13					
	2749 Oct 08 22:29	15° $\mathring{M}$		conjunction	2756 Jan 19 16:14	28° $\mathring{Z}$ 24'50	0°04'33
evening set	2749 Oct 25 14:18	16° $\mathring{M}$ 55'02		minimum elong	2756 Jan 19 16:14	28° $\mathring{Z}$ 24'50	0°04'33
conjunction	2749 Nov 11 14:06	18° $\mathring{M}$ 57'42	2°06'50	behind sun begin	2756 Jan 19 09:24	28° $\mathring{Z}$ 22'51	
minimum elong	2749 Nov 11 14:08	18° $\mathring{M}$ 57'43	2°06'51	behind sun end	2756 Jan 19 23:04	28° $\mathring{Z}$ 26'50	
max. Earth dist.	2749 Nov 11 13:07	18° $\mathring{M}$ 57'24	10.76298 AU	max. Earth dist.	2756 Jan 19 13:17	28° $\mathring{Z}$ 24'01	11.02242 AU
morning rise	2749 Nov 28 10:04	20° $\mathring{M}$ 59'14			2756 Feb 02 03:03	0° $\mathring{\approx}$	
retrograde	2750 Mar 08 02:00	28° $\mathring{M}$ 10'10		morning rise	2756 Feb 05 07:59	0° $\mathring{\approx}$ 22'22	
opposition	2750 May 15 18:44	24° $\mathring{M}$ 51'32	2°29'29	desc. node	2756 Mar 22 23:13	5° $\mathring{\approx}$ 06'39	
min. Earth dist.	2750 May 15 19:18	24° $\mathring{M}$ 51'26	8.80922 AU	retrograde	2756 May 16 18:26	7° $\mathring{\approx}$ 27'03	
direct	2750 Jul 25 14:13	21° $\mathring{M}$ 28'16		opposition	2756 Jul 26 11:02	4° $\mathring{\approx}$ 08'31	0°-10'-52
evening set	2750 Nov 06 20:38	28° $\mathring{M}$ 52'50		min. Earth dist.	2756 Jul 26 13:26	4° $\mathring{\approx}$ 08'04	9.01031 AU
	2750 Nov 16 06:50	0° $\mathring{Z}$		direct	2756 Oct 04 22:31	0° $\mathring{\approx}$ 50'08	
conjunction	2750 Nov 23 17:48	0° $\mathring{Z}$ 53'45	1°55'21	evening set	2757 Jan 13 11:34	7° $\mathring{\approx}$ 52'08	
minimum elong	2750 Nov 23 17:51	0° $\mathring{Z}$ 53'45	1°55'22	conjunction	2757 Jan 30 03:15	9° $\mathring{\approx}$ 49'56	0°-22'-10
max. Earth dist.	2750 Nov 23 16:37	0° $\mathring{Z}$ 53'23	10.84998 AU	minimum elong	2757 Jan 30 03:14	9° $\mathring{\approx}$ 49'56	0°22'10
morning rise	2750 Dec 10 11:37	2° $\mathring{Z}$ 53'40		max. Earth dist.	2757 Jan 29 23:42	9° $\mathring{\approx}$ 48'53	10.99280 AU
retrograde	2751 Mar 20 02:27	10° $\mathring{Z}$ 00'07		morning rise	2757 Feb 15 19:52	11° $\mathring{\approx}$ 48'04	
opposition	2751 May 28 06:04	6° $\mathring{Z}$ 42'08	2°12'11		2757 Mar 17 05:34	15° $\mathring{\approx}$	
min. Earth dist.	2751 May 28 06:34	6° $\mathring{Z}$ 42'03	8.88927 AU	retrograde	2757 May 28 23:21	18° $\mathring{\approx}$ 56'55	
direct	2751 Aug 07 06:09	3° $\mathring{Z}$ 20'06		opposition	2757 Aug 07 17:33	15° $\mathring{\approx}$ 37'31	0°-43'-14
evening set	2751 Nov 18 19:55	10° $\mathring{Z}$ 38'04		min. Earth dist.	2757 Aug 07 20:30	15° $\mathring{\approx}$ 36'58	8.97014 AU
				direct	2757 Aug 16 05:02	15° $\mathring{R}$ $\mathring{\approx}$	
					2757 Oct 16 20:20	12° $\mathring{\approx}$ 19'12	



	2757 Dec 14 02:32	15°♊		min. Earth dist.	2763 Oct 22 09:50	28°♑29'37	8.43196 AU
evening set	2758 Jan 25 00:49	19°♊22'15		direct	2763 Dec 28 19:11	25°♑07'16	
					2764 Mar 15 11:41	0°♌	
conjunction	2758 Feb 10 16:50	21°♊20'46	0°-48'-6	evening set	2764 Apr 07 10:19	2°♌42'21	
minimum elong	2758 Feb 10 16:49	21°♊20'46	0°48'06				
max. Earth dist.	2758 Feb 10 12:29	21°♊19'28	10.94257 AU	conjunction	2764 Apr 24 16:02	4°♌51'48	-2°-12'-53
morning rise	2758 Feb 27 10:47	23°♊19'52		minimum elong	2764 Apr 24 16:03	4°♌51'48	2°12'53
	2758 May 14 18:18	0°♋		max. Earth dist.	2764 Apr 24 15:41	4°♌51'41	10.37866 AU
retrograde	2758 Jun 10 06:23	0°♋34'11		morning rise	2764 May 12 02:24	7°♌02'43	
	2758 Jul 07 02:47	30°♋			2764 Aug 17 20:08	15°♌	
opposition	2758 Aug 20 02:23	27°♋13'42	-1°-14'-14	retrograde	2764 Aug 26 15:35	15°♌04'03	
min. Earth dist.	2758 Aug 20 05:47	27°♋13'04	8.91056 AU		2764 Sep 04 11:16	15°♋	
direct	2758 Oct 28 18:53	23°♋55'09		opposition	2764 Nov 03 20:10	11°♌35'50	-2°-42'-1
	2759 Jan 28 00:06	0°♋		min. Earth dist.	2764 Nov 03 20:01	11°♌35'52	8.32971 AU
evening set	2759 Feb 05 17:53	1°♋00'44		direct	2765 Jan 09 22:18	8°♌12'10	
					2765 Apr 13 14:23	15°♌	
conjunction	2759 Feb 22 10:44	3°♋00'16	-1°-12'-21	evening set	2765 Apr 21 01:03	15°♌55'00	
minimum elong	2759 Feb 22 10:42	3°♋00'15	1°12'22				
max. Earth dist.	2759 Feb 22 06:38	2°♋59'02	10.87405 AU	conjunction	2765 May 08 11:23	18°♌07'06	-2°-6'-48
morning rise	2759 Mar 11 06:14	5°♋00'36		minimum elong	2765 May 08 11:25	18°♌07'07	2°06'48
retrograde	2759 Jun 22 19:09	12°♋21'34		max. Earth dist.	2765 May 08 12:30	18°♌07'28	10.28059 AU
opposition	2759 Sep 01 14:08	8°♋59'48	-1°-42'-37	morning rise	2765 May 26 02:02	20°♌20'37	
min. Earth dist.	2759 Sep 01 17:06	8°♋59'15	8.83415 AU	retrograde	2765 Sep 09 18:33	28°♌28'26	
direct	2759 Nov 09 21:21	5°♋40'49		opposition	2765 Nov 17 11:52	24°♌59'26	-2°-30'-21
evening set	2760 Feb 17 16:01	12°♋50'13		min. Earth dist.	2765 Nov 17 10:35	24°♌59'41	8.23708 AU
				direct	2766 Jan 23 07:44	21°♌34'35	
conjunction	2760 Mar 05 10:15	14°♋51'08	-1°-33'-53	evening set	2766 May 05 00:59	29°♌24'59	
minimum elong	2760 Mar 05 10:13	14°♋51'07	1°33'55		2766 May 09 15:57	0°♐	
max. Earth dist.	2760 Mar 05 07:27	14°♋50'17	10.79010 AU				
morning rise	2760 Mar 22 07:34	16°♋53'02		conjunction	2766 May 22 16:08	1°♐39'43	-1°-53'-40
retrograde	2760 Jul 04 15:53	24°♋21'36		minimum elong	2766 May 22 16:11	1°♐39'44	1°53'41
opposition	2760 Sep 13 05:52	20°♋58'26	-2°-7'-7	max. Earth dist.	2766 May 22 18:20	1°♐40'26	10.19493 AU
min. Earth dist.	2760 Sep 13 07:39	20°♋58'06	8.74409 AU	morning rise	2766 Jun 09 11:08	3°♐55'43	
direct	2760 Nov 21 01:41	17°♋38'50		retrograde	2766 Sep 24 02:59	12°♐08'20	
evening set	2761 Feb 28 20:28	24°♋53'15		opposition	2766 Dec 01 07:51	8°♐38'50	-2°-9'-59
				min. Earth dist.	2766 Dec 01 05:38	8°♐39'18	8.15930 AU
conjunction	2761 Mar 17 16:32	26°♋55'51	-1°-51'-40	direct	2767 Feb 05 22:37	5°♐12'51	
minimum elong	2761 Mar 17 16:30	26°♋55'50	1°51'41	evening set	2767 May 19 09:15	13°♐10'13	
max. Earth dist.	2761 Mar 17 14:25	26°♋55'12	10.69428 AU				
morning rise	2761 Apr 03 16:16	28°♋59'37		conjunction	2767 Jun 06 05:00	15°♐27'18	-1°-33'-52
	2761 Apr 12 04:53	0°♑		minimum elong	2767 Jun 06 05:03	15°♐27'19	1°33'53
retrograde	2761 Jul 17 17:54	6°♑36'26		max. Earth dist.	2767 Jun 06 07:42	15°♐28'10	10.12675 AU
opposition	2761 Sep 26 02:02	3°♑11'52	-2°-26'-28	morning rise	2767 Jun 24 03:59	17°♐45'27	
min. Earth dist.	2761 Sep 26 03:10	3°♑11'39	8.64411 AU	retrograde	2767 Oct 08 14:18	26°♐00'50	
	2761 Nov 20 14:55	30°♋		opposition	2767 Dec 15 07:11	22°♐31'13	-1°-41'-44
direct	2761 Dec 03 09:22	29°♋51'25		min. Earth dist.	2767 Dec 15 04:37	22°♐31'45	8.10125 AU
	2761 Dec 16 02:56	0°♑		direct	2768 Feb 19 19:42	19°♐04'11	
evening set	2762 Mar 13 08:37	7°♑11'59		evening set	2768 Jun 02 00:51	27°♐07'32	
conjunction	2762 Mar 30 07:06	9°♑16'35	-2°-4'-41	conjunction	2768 Jun 20 00:35	29°♐26'29	-1°-8'-21
minimum elong	2762 Mar 30 07:05	9°♑16'35	2°04'42	minimum elong	2768 Jun 20 00:38	29°♐26'30	1°08'22
max. Earth dist.	2762 Mar 30 04:54	9°♑15'55	10.59066 AU	max. Earth dist.	2768 Jun 20 03:32	29°♐27'26	10.08047 AU
morning rise	2762 Apr 16 09:54	11°♑22'31			2768 Jun 24 08:04	0°♑	
retrograde	2762 Jul 31 02:31	19°♑07'49		morning rise	2768 Jul 08 02:44	1°♑46'12	
opposition	2762 Oct 09 02:55	15°♑41'55	-2°-39'-26	retrograde	2768 Oct 22 02:15	10°♑02'05	
min. Earth dist.	2762 Oct 09 04:00	15°♑41'42	8.53848 AU	opposition	2768 Dec 28 08:35	6°♑32'43	-1°-7'-6
direct	2762 Dec 15 23:25	12°♑20'28		min. Earth dist.	2768 Dec 28 05:58	6°♑33'15	8.06684 AU
evening set	2763 Mar 26 05:04	19°♑48'03		direct	2769 Mar 04 23:21	3°♑04'46	
				evening set	2769 Jun 16 21:55	11°♑12'45	
conjunction	2763 Apr 12 06:45	21°♑54'57	-2°-12'-1				
minimum elong	2763 Apr 12 06:45	21°♑54'57	2°12'01	conjunction	2769 Jul 05 00:33	13°♑32'52	0°-38'-34
max. Earth dist.	2763 Apr 12 05:01	21°♑54'24	10.48378 AU	minimum elong	2769 Jul 05 00:35	13°♑32'53	0°38'35
morning rise	2763 Apr 29 13:07	24°♑03'18		max. Earth dist.	2769 Jul 05 03:45	13°♑33'54	10.05917 AU
	2763 Jun 25 21:26	0°♒		morning rise	2769 Jul 23 04:30	15°♑53'23	
retrograde	2763 Aug 13 18:04	1°♒56'56		retrograde	2769 Nov 05 11:30	24°♑07'31	
	2763 Oct 02 14:32	30°♋		opposition	2770 Jan 11 10:55	20°♑38'44	0°-28'-14
opposition	2763 Oct 22 09:01	28°♑29'47	-2°-44'-54	min. Earth dist.	2770 Jan 11 08:10	20°♑39'18	8.05844 AU



direct	2770 Mar 19 07:21	17° $\overline{5}$ 10'09		morning rise	2775 Oct 16 21:21	8° $\overline{5}$ 19'34	
evening set	2770 Jul 01 22:00	25° $\overline{5}$ 21'01		retrograde	2776 Jan 25 16:43	15° $\overline{5}$ 53'32	
conjunction	2770 Jul 20 01:59	27° $\overline{5}$ 41'26	0°-6'-27	opposition	2776 Apr 01 22:49	12° $\overline{5}$ 31'41	2°36'39
minimum elong	2770 Jul 20 01:58	27° $\overline{5}$ 41'26	0°06'28	min. Earth dist.	2776 Apr 01 22:21	12° $\overline{5}$ 31'46	8.46964 AU
behind sun begin	2770 Jul 19 19:04	27° $\overline{5}$ 39'13		direct	2776 Jun 10 11:39	9° $\overline{5}$ 04'38	
behind sun end	2770 Jul 20 08:52	27° $\overline{5}$ 43'39		evening set	2776 Sep 24 13:17	16° $\overline{5}$ 54'57	
max. Earth dist.	2770 Jul 20 05:33	27° $\overline{5}$ 42'34	10.06429 AU	conjunction	2776 Oct 11 22:16	19° $\overline{5}$ 03'19	2°10'41
morning rise	2770 Aug 07 05:58	0° $\overline{0}$ 01'50		minimum elong	2776 Oct 11 22:15	19° $\overline{5}$ 03'19	2°10'40
	2770 Aug 07 00:12	0° $\overline{0}$		max. Earth dist.	2776 Oct 11 21:46	19° $\overline{5}$ 03'10	10.51988 AU
asc. node	2770 Oct 02 17:10	6° $\overline{0}$ 09'31		morning rise	2776 Oct 29 02:51	21° $\overline{5}$ 10'21	
retrograde	2770 Nov 19 18:08	8° $\overline{0}$ 12'11		retrograde	2777 Feb 06 09:52	28° $\overline{5}$ 36'51	
opposition	2771 Jan 25 12:44	4° $\overline{0}$ 44'16	0°12'18	opposition	2777 Apr 15 01:24	25° $\overline{5}$ 16'10	2°43'50
min. Earth dist.	2771 Jan 25 09:31	4° $\overline{0}$ 44'56	8.07674 AU	min. Earth dist.	2777 Apr 15 01:22	25° $\overline{5}$ 16'10	8.57235 AU
direct	2771 Apr 02 16:40	1° $\overline{0}$ 15'18		direct	2777 Jun 24 01:47	21° $\overline{5}$ 50'09	
evening set	2771 Jul 16 22:25	9° $\overline{0}$ 27'06		evening set	2777 Oct 07 18:01	29° $\overline{5}$ 33'13	
					2777 Oct 11 10:48	0° $\overline{0}$	
conjunction	2771 Aug 04 02:05	11° $\overline{0}$ 46'57	0°26'02	conjunction	2777 Oct 24 22:57	1° $\overline{0}$ 39'07	2°13'29
minimum elong	2771 Aug 04 02:04	11° $\overline{0}$ 46'56	0°26'02	minimum elong	2777 Oct 24 22:57	1° $\overline{0}$ 39'07	2°13'28
max. Earth dist.	2771 Aug 04 06:15	11° $\overline{0}$ 48'17	10.09565 AU	max. Earth dist.	2777 Oct 24 22:01	1° $\overline{0}$ 38'50	10.62132 AU
morning rise	2771 Aug 22 04:26	14° $\overline{0}$ 06'20		morning rise	2777 Nov 10 23:27	3° $\overline{0}$ 43'42	
	2771 Aug 29 07:51	15° $\overline{0}$		retrograde	2778 Feb 18 22:31	11° $\overline{0}$ 03'28	
retrograde	2771 Dec 03 21:15	22° $\overline{0}$ 11'08		opposition	2778 Apr 27 23:24	7° $\overline{0}$ 43'46	2°43'05
opposition	2772 Feb 08 12:42	18° $\overline{0}$ 44'16	0°51'48	min. Earth dist.	2778 Apr 27 23:32	7° $\overline{0}$ 43'44	8.67169 AU
min. Earth dist.	2772 Feb 08 08:54	18° $\overline{0}$ 45'03	8.12060 AU	direct	2778 Jul 07 09:16	4° $\overline{0}$ 18'52	
direct	2772 Apr 16 01:50	15° $\overline{0}$ 15'11		evening set	2778 Oct 20 13:08	11° $\overline{0}$ 54'26	
evening set	2772 Jul 30 20:22	23° $\overline{0}$ 25'55					
conjunction	2772 Aug 17 22:08	25° $\overline{0}$ 44'20	0°56'39	conjunction	2778 Nov 06 14:35	13° $\overline{0}$ 58'08	2°10'00
minimum elong	2772 Aug 17 22:05	25° $\overline{0}$ 44'19	0°56'39	minimum elong	2778 Nov 06 14:37	13° $\overline{0}$ 58'09	2°10'01
max. Earth dist.	2772 Aug 18 02:41	25° $\overline{0}$ 45'48	10.15110 AU	max. Earth dist.	2778 Nov 06 13:41	13° $\overline{0}$ 57'52	10.71753 AU
morning rise	2772 Sep 04 21:17	28° $\overline{0}$ 01'56			2778 Nov 15 02:06	15° $\overline{0}$	
	2772 Sep 20 22:56	0° $\overline{0}$		morning rise	2778 Nov 23 11:44	16° $\overline{0}$ 00'36	
retrograde	2772 Dec 16 19:18	5° $\overline{0}$ 59'49		retrograde	2779 Mar 03 06:39	23° $\overline{0}$ 14'26	
opposition	2773 Feb 21 09:46	2° $\overline{0}$ 34'09	1°27'44	opposition	2779 May 10 17:03	19° $\overline{0}$ 55'31	2°34'57
min. Earth dist.	2773 Feb 21 06:00	2° $\overline{0}$ 34'55	8.18694 AU	min. Earth dist.	2779 May 10 17:58	19° $\overline{0}$ 55'21	8.76368 AU
	2773 Mar 29 01:18	30° $\overline{0}$ 00'		direct	2779 Jul 20 09:09	16° $\overline{0}$ 31'44	
direct	2773 Apr 30 09:45	29° $\overline{0}$ 05'13		evening set	2779 Nov 01 23:46	23° $\overline{0}$ 59'59	
	2773 Jun 01 16:12	0° $\overline{0}$					
evening set	2773 Aug 14 13:11	7° $\overline{0}$ 12'57		conjunction	2779 Nov 18 22:15	26° $\overline{0}$ 01'48	2°00'48
				minimum elong	2779 Nov 18 22:17	26° $\overline{0}$ 01'49	2°00'48
conjunction	2773 Sep 01 11:36	9° $\overline{0}$ 29'15	1°23'37	max. Earth dist.	2779 Nov 18 20:34	26° $\overline{0}$ 01'18	10.80459 AU
minimum elong	2773 Sep 01 11:32	9° $\overline{0}$ 29'14	1°23'37	morning rise	2779 Dec 05 16:53	28° $\overline{0}$ 02'32	
max. Earth dist.	2773 Sep 01 15:49	9° $\overline{0}$ 30'36	10.22679 AU		2779 Dec 22 19:19	0° $\overline{0}$	
morning rise	2773 Sep 19 06:25	11° $\overline{0}$ 44'27		retrograde	2780 Mar 14 08:54	5° $\overline{0}$ 11'24	
retrograde	2773 Dec 30 09:26	19° $\overline{0}$ 34'32		opposition	2780 May 22 06:39	1° $\overline{0}$ 53'05	2°20'13
opposition	2774 Mar 07 02:52	16° $\overline{0}$ 10'09	1°58'04	min. Earth dist.	2780 May 22 08:45	1° $\overline{0}$ 52'42	8.84466 AU
min. Earth dist.	2774 Mar 06 23:51	16° $\overline{0}$ 10'45	8.27120 AU		2780 Jun 17 19:32	30° $\overline{0}$ 00'	
direct	2774 May 14 15:30	12° $\overline{0}$ 41'36		direct	2780 Aug 01 03:47	28° $\overline{0}$ 30'20	
evening set	2774 Aug 28 22:30	20° $\overline{0}$ 44'39			2780 Sep 13 14:50	0° $\overline{0}$	
				evening set	2780 Nov 13 02:45	5° $\overline{0}$ 51'47	
conjunction	2774 Sep 15 16:39	22° $\overline{0}$ 58'24	1°45'29	conjunction	2780 Nov 29 22:48	7° $\overline{0}$ 52'03	1°46'32
minimum elong	2774 Sep 15 16:36	22° $\overline{0}$ 58'23	1°45'29	minimum elong	2780 Nov 29 22:51	7° $\overline{0}$ 52'04	1°46'33
max. Earth dist.	2774 Sep 15 19:45	22° $\overline{0}$ 59'22	10.31756 AU	max. Earth dist.	2780 Nov 29 19:53	7° $\overline{0}$ 51'11	10.87907 AU
morning rise	2774 Oct 03 06:37	25° $\overline{0}$ 10'52		morning rise	2780 Dec 16 15:49	9° $\overline{0}$ 51'26	
	2774 Nov 15 17:08	0° $\overline{0}$		retrograde	2781 Mar 26 08:39	16° $\overline{0}$ 56'34	
retrograde	2775 Jan 12 16:28	2° $\overline{0}$ 52'49		opposition	2781 Jun 03 17:03	13° $\overline{0}$ 38'35	1°59'51
	2775 Mar 14 06:54	30° $\overline{0}$ 00'		min. Earth dist.	2781 Jun 03 19:36	13° $\overline{0}$ 38'07	8.91149 AU
opposition	2775 Mar 20 15:20	29° $\overline{0}$ 29'42	2°21'19	direct	2781 Aug 13 18:16	10° $\overline{0}$ 16'48	
min. Earth dist.	2775 Mar 20 13:43	29° $\overline{0}$ 30'01	8.36757 AU	evening set	2781 Nov 24 23:10	17° $\overline{0}$ 32'10	
direct	2775 May 28 16:19	26° $\overline{0}$ 01'47					
	2775 Aug 07 21:07	0° $\overline{0}$		conjunction	2781 Dec 11 17:29	19° $\overline{0}$ 31'16	1°28'01
evening set	2775 Sep 11 22:40	3° $\overline{0}$ 58'50		minimum elong	2781 Dec 11 17:32	19° $\overline{0}$ 31'17	1°28'01
conjunction	2775 Sep 29 12:12	6° $\overline{0}$ 09'53	2°01'20	max. Earth dist.	2781 Dec 11 14:18	19° $\overline{0}$ 30'19	10.93811 AU
minimum elong	2775 Sep 29 12:10	6° $\overline{0}$ 09'52	2°01'20	morning rise	2781 Dec 28 09:28	21° $\overline{0}$ 29'40	
max. Earth dist.	2775 Sep 29 13:18	6° $\overline{0}$ 10'14	10.41719 AU	retrograde	2782 Apr 07 06:18	28° $\overline{0}$ 32'25	



opposition	2782 Jun 16 00:44	25°♄14'30	1°34'51	max. Earth dist.	2788 Feb 17 19:07	28°♄19'54	10.89341 AU
min. Earth dist.	2782 Jun 16 02:50	25°♄14'07	8.96165 AU		2788 Mar 02 18:33	0°♄	
direct	2782 Aug 26 02:49	21°♄53'36		morning rise	2788 Mar 05 15:43	0°♄20'21	
evening set	2782 Dec 06 14:48	29°♄03'54		retrograde	2788 Jun 16 22:01	7°♄38'46	
	2782 Dec 14 14:17	0°♄		opposition	2788 Aug 26 16:53	4°♄17'18	-1°-31'-7
				min. Earth dist.	2788 Aug 26 18:01	4°♄17'05	8.85978 AU
conjunction	2782 Dec 23 08:01	1°♄02'10	1°06'07	direct	2788 Nov 04 03:59	0°♄58'23	
minimum elong	2782 Dec 23 08:03	1°♄02'11	1°06'06	evening set	2789 Feb 12 00:29	8°♄06'20	
max. Earth dist.	2782 Dec 23 05:33	1°♄01'27	10.97948 AU				
morning rise	2783 Jan 08 23:22	2°♄59'58		conjunction	2789 Feb 28 17:58	10°♄06'42	-1°-25'-14
retrograde	2783 Apr 19 04:14	10°♄01'43		minimum elong	2789 Feb 28 17:56	10°♄06'41	1°25'16
opposition	2783 Jun 28 06:25	6°♄43'41	1°06'18	max. Earth dist.	2789 Feb 28 15:38	10°♄05'59	10.82186 AU
min. Earth dist.	2783 Jun 28 08:24	6°♄43'19	8.99333 AU	morning rise	2789 Mar 17 14:30	12°♄07'58	
direct	2783 Sep 07 07:17	3°♄23'31		retrograde	2789 Jun 29 15:30	19°♄33'25	
evening set	2783 Dec 18 03:17	10°♄29'59		opposition	2789 Sep 08 07:08	16°♄10'50	-1°-57'-22
				min. Earth dist.	2789 Sep 08 08:31	16°♄10'35	8.78152 AU
conjunction	2784 Jan 03 19:39	12°♄27'48	0°41'42	direct	2789 Nov 16 06:27	12°♄51'34	
minimum elong	2784 Jan 03 19:41	12°♄27'48	0°41'41	evening set	2790 Feb 24 02:15	20°♄03'54	
max. Earth dist.	2784 Jan 03 17:00	12°♄27'00	11.00168 AU				
morning rise	2784 Jan 20 10:55	14°♄25'20		conjunction	2790 Mar 12 21:20	22°♄05'44	-1°-44'-41
retrograde	2784 Apr 30 02:43	21°♄27'31		minimum elong	2790 Mar 12 21:18	22°♄05'43	1°44'43
opposition	2784 Jul 09 11:26	18°♄09'12	0°35'16	max. Earth dist.	2790 Mar 12 19:33	22°♄05'11	10.73718 AU
min. Earth dist.	2784 Jul 09 13:55	18°♄08'45	9.00544 AU	morning rise	2790 Mar 29 20:07	24°♄08'42	
direct	2784 Sep 18 07:10	14°♄49'39			2790 May 27 12:11	0°♄	
evening set	2784 Dec 28 14:03	21°♄53'34		retrograde	2790 Jul 12 13:41	1°♄41'57	
					2790 Aug 28 18:44	30°♄	
conjunction	2785 Jan 14 05:50	23°♄51'14	0°15'42	opposition	2790 Sep 21 01:28	28°♄18'12	-2°-18'-58
minimum elong	2785 Jan 14 05:50	23°♄51'14	0°15'42	min. Earth dist.	2790 Sep 21 02:25	28°♄18'01	8.69180 AU
behind sun begin	2785 Jan 14 03:57	23°♄50'41		direct	2790 Nov 28 13:18	24°♄58'22	
behind sun end	2785 Jan 14 07:43	23°♄51'47			2791 Feb 16 20:37	0°♄	
max. Earth dist.	2785 Jan 14 02:24	23°♄50'14	11.00397 AU	evening set	2791 Mar 08 11:03	2°♄16'13	
morning rise	2785 Jan 30 21:33	25°♄48'53					
	2785 Mar 11 22:41	0°♄		conjunction	2791 Mar 25 08:24	4°♄19'52	-1°-59'-46
retrograde	2785 May 12 00:40	2°♄53'03		minimum elong	2791 Mar 25 08:22	4°♄19'51	1°59'48
	2785 Jul 15 20:44	30°♄		max. Earth dist.	2791 Mar 25 07:57	4°♄19'43	10.64277 AU
opposition	2785 Jul 21 16:32	29°♄34'12	0°02'52	morning rise	2791 Apr 11 09:45	6°♄24'46	
min. Earth dist.	2785 Jul 21 19:24	29°♄33'40	8.99761 AU	retrograde	2791 Jul 25 19:36	14°♄06'17	
desc. node	2785 Aug 23 16:52	27°♄20'34		opposition	2791 Oct 04 00:21	10°♄41'19	-2°-34'-40
direct	2785 Sep 30 06:40	26°♄15'04		min. Earth dist.	2791 Oct 04 00:15	10°♄41'20	8.59435 AU
	2785 Dec 09 13:25	0°♄		direct	2791 Dec 11 02:10	7°♄20'48	
evening set	2786 Jan 09 00:48	3°♄17'54		evening set	2792 Mar 20 03:52	14°♄45'01	
conjunction	2786 Jan 25 16:29	5°♄15'44	0°-11'-1	conjunction	2792 Apr 06 04:08	16°♄50'46	-2°-9'-32
minimum elong	2786 Jan 25 16:28	5°♄15'44	0°11'02	minimum elong	2792 Apr 06 04:07	16°♄50'46	2°09'34
behind sun begin	2786 Jan 25 11:11	5°♄14'11		max. Earth dist.	2792 Apr 06 04:53	16°♄51'00	10.54283 AU
behind sun end	2786 Jan 25 21:46	5°♄17'17		morning rise	2792 Apr 23 08:39	18°♄57'54	
max. Earth dist.	2786 Jan 25 13:09	5°♄14'46	10.98626 AU	retrograde	2792 Aug 07 09:27	26°♄47'38	
morning rise	2786 Feb 11 08:57	7°♄13'49		opposition	2792 Oct 16 04:11	23°♄21'31	-2°-43'-19
retrograde	2786 May 24 03:40	14°♄21'24		min. Earth dist.	2792 Oct 16 03:04	23°♄21'44	8.49354 AU
opposition	2786 Aug 02 22:22	11°♄01'50	0°-29'-46	direct	2792 Dec 22 18:21	20°♄00'06	
min. Earth dist.	2786 Aug 03 00:39	11°♄01'25	8.97002 AU	evening set	2793 Apr 02 05:18	27°♄31'19	
direct	2786 Oct 12 06:07	7°♄42'58					
evening set	2787 Jan 20 13:04	14°♄46'05		conjunction	2793 Apr 19 09:07	29°♄39'26	-2°-13'-9
	2787 Jan 22 12:39	15°♄		minimum elong	2793 Apr 19 09:07	29°♄39'26	2°13'10
				max. Earth dist.	2793 Apr 19 10:00	29°♄39'43	10.44187 AU
conjunction	2787 Feb 06 05:06	16°♄44'28	0°-37'-22		2793 Apr 22 02:46	0°♄	
minimum elong	2787 Feb 06 05:05	16°♄44'28	0°37'23	morning rise	2793 May 06 17:29	1°♄49'00	
max. Earth dist.	2787 Feb 06 02:47	16°♄43'47	10.94897 AU	retrograde	2793 Aug 21 05:01	9°♄46'25	
morning rise	2787 Feb 22 22:29	18°♄43'18		opposition	2793 Oct 29 12:56	6°♄19'15	-2°-43'-58
retrograde	2787 Jun 05 10:27	25°♄55'39		min. Earth dist.	2793 Oct 29 11:43	6°♄19'30	8.39376 AU
opposition	2787 Aug 15 06:11	22°♄35'13	-1°-1'-31	direct	2794 Jan 04 17:09	2°♄56'46	
min. Earth dist.	2787 Aug 15 07:37	22°♄34'57	8.92349 AU	evening set	2794 Apr 15 15:52	10°♄35'24	
direct	2787 Oct 24 03:40	19°♄16'26					
evening set	2788 Feb 01 04:27	26°♄21'17		conjunction	2794 May 02 23:52	12°♄46'02	-2°-10'-1
				minimum elong	2794 May 02 23:54	12°♄46'03	2°10'01
conjunction	2788 Feb 17 21:02	28°♄20'29	-1°-2'-27	max. Earth dist.	2794 May 03 00:29	12°♄46'14	10.34427 AU
minimum elong	2788 Feb 17 21:00	28°♄20'28	1°02'28	morning rise	2794 May 20 12:31	14°♄58'08	



	2794 May 20 18:33	15°♄		conjunction	2800 Jul 27 23:17	5°♄55'42	0°12'09
retrograde	2794 Sep 04 04:51	23°♄02'15		minimum elong	2800 Jul 27 23:17	5°♄55'42	0°12'09
opposition	2794 Nov 12 02:16	19°♄34'14	-2°-36'00	behind sun begin	2800 Jul 27 18:26	5°♄54'09	
min. Earth dist.	2794 Nov 12 01:24	19°♄34'25	8.29934 AU	behind sun end	2800 Jul 28 04:07	5°♄57'15	
direct	2795 Jan 17 23:52	16°♄10'34		max. Earth dist.	2800 Jul 28 02:29	5°♄56'43	10.08805 AU
evening set	2795 Apr 29 11:17	23°♄56'40		morning rise	2800 Aug 15 02:24	8°♄15'25	
					2800 Oct 19 05:34	15°♄	
conjunction	2795 May 17 00:00	26°♄09'55	-1°-59'-52	retrograde	2800 Nov 27 04:20	16°♄22'01	
minimum elong	2795 May 17 00:02	26°♄09'56	1°59'52		2801 Jan 05 11:25	15°♄♄	
max. Earth dist.	2795 May 17 00:37	26°♄10'07	10.25442 AU	opposition	2801 Feb 01 20:06	12°♄54'34	0°34'58
morning rise	2795 Jun 03 17:05	28°♄24'32		min. Earth dist.	2801 Feb 01 17:52	12°♄55'02	8.10524 AU
	2795 Jun 16 17:07	0°♄		direct	2801 Apr 10 04:48	9°♄25'20	
retrograde	2795 Sep 18 09:52	6°♄34'05			2801 Jul 03 07:32	15°♄	
opposition	2795 Nov 25 20:01	3°♄05'28	-2°-19'-18	evening set	2801 Jul 24 17:54	17°♄35'59	
min. Earth dist.	2795 Nov 25 19:12	3°♄05'38	8.21499 AU				
	2796 Jan 12 19:01	30°♄♄		conjunction	2801 Aug 11 20:31	19°♄54'57	0°43'41
direct	2796 Jan 31 12:34	29°♄40'36		minimum elong	2801 Aug 11 20:29	19°♄54'56	0°43'41
	2796 Feb 19 03:32	0°♄		max. Earth dist.	2801 Aug 11 22:59	19°♄55'44	10.12837 AU
evening set	2796 May 12 15:15	7°♄33'54		morning rise	2801 Aug 29 21:14	22°♄13'17	
					2801 Nov 25 11:13	0°♄♄	
conjunction	2796 May 30 08:51	9°♄49'39	-1°-42'-51	retrograde	2801 Dec 11 02:53	0°♄♄13'40	
minimum elong	2796 May 30 08:54	9°♄49'40	1°42'51		2801 Dec 26 18:31	30°♄♄	
max. Earth dist.	2796 May 30 10:16	9°♄50'06	10.17746 AU	opposition	2802 Feb 15 17:51	26°♄47'14	1°12'39
morning rise	2796 Jun 17 06:09	12°♄06'35		min. Earth dist.	2802 Feb 15 15:53	26°♄47'38	8.15720 AU
retrograde	2796 Oct 01 18:39	20°♄19'50		direct	2802 Apr 24 14:00	23°♄17'51	
opposition	2796 Dec 08 17:21	16°♄50'52	-1°-54'-21		2802 Jul 27 18:40	0°♄♄	
min. Earth dist.	2796 Dec 08 15:56	16°♄51'09	8.14627 AU	evening set	2802 Aug 08 12:14	1°♄26'33	
direct	2797 Feb 13 07:36	13°♄24'50					
evening set	2797 May 27 03:14	21°♄24'35		conjunction	2802 Aug 26 12:05	3°♄43'44	1°12'22
				minimum elong	2802 Aug 26 12:02	3°♄43'43	1°12'22
conjunction	2797 Jun 14 01:18	23°♄42'29	-1°-19'-41	max. Earth dist.	2802 Aug 26 14:11	3°♄44'25	10.19074 AU
minimum elong	2797 Jun 14 01:21	23°♄42'30	1°19'42	morning rise	2802 Sep 13 09:04	6°♄00'01	
max. Earth dist.	2797 Jun 14 03:46	23°♄43'16	10.11887 AU	retrograde	2802 Dec 24 18:15	13°♄53'12	
morning rise	2797 Jul 02 02:03	26°♄01'16		opposition	2803 Mar 01 12:04	10°♄27'53	1°45'35
	2797 Aug 04 20:35	0°♄♄		min. Earth dist.	2803 Mar 01 09:59	10°♄28'18	8.22946 AU
retrograde	2797 Oct 16 05:06	4°♄16'04		direct	2803 May 08 21:10	6°♄58'42	
opposition	2797 Dec 22 17:09	0°♄47'03	-1°-22'-21	evening set	2803 Aug 23 00:15	15°♄03'39	
min. Earth dist.	2797 Dec 22 14:52	0°♄47'31	8.09830 AU				
	2798 Jan 01 08:33	30°♄♄		conjunction	2803 Sep 09 20:21	17°♄18'32	1°36'34
direct	2798 Feb 27 08:08	27°♄19'55		minimum elong	2803 Sep 09 20:18	17°♄18'31	1°36'34
	2798 Apr 23 12:59	0°♄♄		max. Earth dist.	2803 Sep 09 22:20	17°♄19'10	10.27121 AU
evening set	2798 Jun 10 21:27	5°♄24'57		morning rise	2803 Sep 27 12:44	19°♄32'16	
				retrograde	2804 Jan 07 04:12	27°♄17'41	
conjunction	2798 Jun 28 22:59	7°♄44'22	0°-51'-37	opposition	2804 Mar 14 01:53	23°♄53'33	2°12'02
minimum elong	2798 Jun 28 23:01	7°♄44'23	0°51'38	min. Earth dist.	2804 Mar 13 23:43	23°♄53'59	8.31749 AU
max. Earth dist.	2798 Jun 29 02:09	7°♄45'24	10.08304 AU	direct	2804 May 21 22:50	20°♄24'51	
morning rise	2798 Jul 17 02:03	10°♄04'19		evening set	2804 Sep 05 04:09	28°♄24'33	
retrograde	2798 Oct 30 15:18	18°♄18'27			2804 Sep 17 22:42	0°♄♄	
opposition	2799 Jan 05 18:32	14°♄49'40	0°-45'-9				
min. Earth dist.	2799 Jan 05 15:45	14°♄50'15	8.07466 AU	conjunction	2804 Sep 22 19:54	0°♄36'51	1°55'08
direct	2799 Mar 13 12:38	11°♄21'37		minimum elong	2804 Sep 22 19:52	0°♄36'51	1°55'07
evening set	2799 Jun 25 19:32	19°♄30'20		max. Earth dist.	2804 Sep 22 21:51	0°♄37'28	10.36493 AU
				morning rise	2804 Oct 10 07:16	2°♄47'49	
conjunction	2799 Jul 13 23:07	21°♄50'29	0°-20'-21	retrograde	2805 Jan 19 08:04	10°♄25'16	
minimum elong	2799 Jul 13 23:08	21°♄50'29	0°20'22	opposition	2805 Mar 27 11:09	7°♄02'21	2°30'54
max. Earth dist.	2799 Jul 14 02:38	21°♄51'37	10.07254 AU	min. Earth dist.	2805 Mar 27 09:17	7°♄02'43	8.41616 AU
morning rise	2799 Aug 01 03:01	24°♄10'46		direct	2805 Jun 04 19:30	3°♄34'26	
	2799 Sep 22 21:48	0°♄♄		evening set	2805 Sep 18 22:36	11°♄27'43	
retrograde	2799 Nov 13 23:52	2°♄22'06					
	2800 Jan 06 05:11	30°♄♄		conjunction	2805 Oct 06 09:47	13°♄37'20	2°07'22
opposition	2800 Jan 19 20:01	28°♄53'51	0°-5'-9	minimum elong	2805 Oct 06 09:45	13°♄37'19	2°07'21
min. Earth dist.	2800 Jan 19 17:14	28°♄54'25	8.07706 AU	max. Earth dist.	2805 Oct 06 11:30	13°♄37'52	10.46669 AU
asc. node	2800 Mar 08 03:41	25°♄44'24		morning rise	2805 Oct 23 16:15	15°♄45'32	
direct	2800 Mar 26 19:44	25°♄25'04		retrograde	2806 Feb 01 04:18	23°♄15'14	
	2800 Jun 09 15:09	0°♄♄		opposition	2806 Apr 09 15:34	19°♄53'33	2°41'41
evening set	2800 Jul 09 19:20	3°♄35'42		min. Earth dist.	2806 Apr 09 14:41	19°♄53'44	8.52022 AU
				direct	2806 Jun 18 10:58	16°♄26'38	



evening set	2806 Oct 02 07:15	24°♄12'45		opposition	2812 Jun 22 02:34	1°♄47'34	1°19'31
				min. Earth dist.	2812 Jun 22 05:00	1°♄47'07	8.99686 AU
conjunction	2806 Oct 19 14:02	26°♄19'44	2°13'03		2812 Jul 17 16:17	30°♄♂	
minimum elong	2806 Oct 19 14:01	26°♄19'44	2°13'03	direct	2812 Sep 01 03:26	28°♂27'33	
max. Earth dist.	2806 Oct 19 14:35	26°♄19'55	10.57134 AU		2812 Oct 15 08:23	0°♄	
morning rise	2806 Nov 05 16:14	28°♄25'23		evening set	2812 Dec 12 07:39	5°♄35'11	
	2806 Nov 19 00:59	0°♄					
retrograde	2807 Feb 13 18:04	5°♄47'49		conjunction	2812 Dec 29 00:11	7°♄33'00	0°52'58
opposition	2807 Apr 22 14:59	2°♄27'19	2°44'24	minimum elong	2812 Dec 29 00:13	7°♄33'00	0°52'57
min. Earth dist.	2807 Apr 22 15:04	2°♄27'18	8.62452 AU	max. Earth dist.	2812 Dec 28 21:12	7°♄32'07	11.01091 AU
	2807 May 28 01:05	30°♄♂		morning rise	2813 Jan 14 15:30	9°♄30'27	
direct	2807 Jul 01 20:41	29°♄01'32		retrograde	2813 Apr 25 01:36	16°♄31'44	
	2807 Aug 05 08:26	0°♄		opposition	2813 Jul 04 07:43	13°♄14'08	0°49'31
evening set	2807 Oct 15 06:08	6°♄40'10		min. Earth dist.	2813 Jul 04 09:49	13°♄13'45	9.02034 AU
				direct	2813 Sep 13 06:25	9°♄54'53	
conjunction	2807 Nov 01 09:01	8°♄44'47	2°12'19	evening set	2813 Dec 23 18:47	16°♄59'17	
minimum elong	2807 Nov 01 09:02	8°♄44'47	2°12'19				
max. Earth dist.	2807 Nov 01 08:17	8°♄44'33	10.67382 AU	conjunction	2814 Jan 09 10:49	18°♄56'48	0°27'36
morning rise	2807 Nov 18 07:43	10°♄48'07		minimum elong	2814 Jan 09 10:50	18°♄56'48	0°27'36
	2807 Dec 26 23:16	15°♄		max. Earth dist.	2814 Jan 09 08:19	18°♄56'04	11.02406 AU
retrograde	2808 Feb 26 02:31	18°♄04'06		morning rise	2814 Jan 26 02:13	20°♄54'11	
	2808 May 01 01:24	15°♄♄		retrograde	2814 May 07 00:09	27°♄56'43	
opposition	2808 May 04 09:50	14°♄44'37	2°39'27	opposition	2814 Jul 16 12:25	24°♄38'42	0°17'39
min. Earth dist.	2808 May 04 10:19	14°♄44'31	8.72404 AU	min. Earth dist.	2814 Jul 16 14:24	24°♄38'20	9.02251 AU
direct	2808 Jul 13 23:38	11°♄20'05		direct	2814 Sep 25 05:53	21°♄19'59	
	2808 Sep 21 12:59	15°♄		evening set	2815 Jan 04 05:25	28°♄22'35	
evening set	2808 Oct 26 19:55	18°♄51'15			2815 Jan 18 01:08	0°♄	
conjunction	2808 Nov 12 19:35	20°♄53'48	2°05'35	conjunction	2815 Jan 20 21:08	0°♄20'08	0°01'10
minimum elong	2808 Nov 12 19:36	20°♄53'48	2°05'36	minimum elong	2815 Jan 20 21:09	0°♄20'08	0°01'11
max. Earth dist.	2808 Nov 12 18:19	20°♄53'25	10.76937 AU	behind sun begin	2815 Jan 20 14:10	0°♄18'06	
morning rise	2808 Nov 29 15:24	22°♄55'12		behind sun end	2815 Jan 21 04:07	0°♄22'11	
	2809 Feb 26 19:48	0°♂		max. Earth dist.	2815 Jan 20 18:16	0°♄19'21	11.01531 AU
retrograde	2809 Mar 09 06:20	0°♂05'44		desc. node	2815 Feb 05 20:42	2°♄13'03	
	2809 Mar 19 19:39	30°♄♄		morning rise	2815 Feb 06 13:01	2°♄17'47	
opposition	2809 May 17 00:34	26°♄47'05	2°27'34	retrograde	2815 May 19 01:46	9°♄23'03	
min. Earth dist.	2809 May 17 00:51	26°♄47'02	8.81436 AU	opposition	2815 Jul 28 17:36	6°♄04'25	0°-14'-57
direct	2809 Jul 26 21:08	23°♄23'50		min. Earth dist.	2815 Jul 28 20:20	6°♄03'55	9.00261 AU
	2809 Nov 01 04:58	0°♂		direct	2815 Oct 07 04:03	2°♄45'59	
evening set	2809 Nov 08 01:35	0°♂47'53		evening set	2816 Jan 15 16:56	9°♄48'20	
conjunction	2809 Nov 24 22:45	2°♂48'42	1°53'30	conjunction	2816 Feb 01 08:36	11°♄46'15	0°-25'-28
minimum elong	2809 Nov 24 22:47	2°♂48'43	1°53'31	minimum elong	2816 Feb 01 08:35	11°♄46'15	0°25'28
max. Earth dist.	2809 Nov 24 21:53	2°♂48'27	10.85390 AU	max. Earth dist.	2816 Feb 01 04:22	11°♄45'00	10.98451 AU
morning rise	2809 Dec 11 16:23	4°♂48'33		morning rise	2816 Feb 18 01:26	13°♄44'33	
retrograde	2810 Mar 21 08:55	11°♂54'47			2816 Feb 29 01:53	15°♄	
opposition	2810 May 29 11:49	8°♂36'46	2°09'36	retrograde	2816 May 30 05:27	20°♄54'04	
min. Earth dist.	2810 May 29 12:31	8°♂36'38	8.89185 AU	opposition	2816 Aug 09 00:36	17°♄34'35	0°-47'-12
direct	2810 Aug 08 12:13	5°♂14'45		min. Earth dist.	2816 Aug 09 04:05	17°♄33'56	8.96124 AU
evening set	2810 Nov 20 00:24	12°♂32'18			2816 Sep 17 20:30	15°♄♄	
				direct	2816 Oct 18 01:39	14°♄16'13	
conjunction	2810 Dec 06 19:35	14°♂31'48	1°36'49		2816 Nov 16 19:05	15°♄	
minimum elong	2810 Dec 06 19:37	14°♂31'48	1°36'49	evening set	2817 Jan 26 06:43	21°♄19'47	
max. Earth dist.	2810 Dec 06 18:17	14°♂31'24	10.92403 AU				
morning rise	2810 Dec 23 11:49	16°♂30'28		conjunction	2817 Feb 11 22:48	23°♄18'26	0°-51'-14
retrograde	2811 Apr 02 07:05	23°♂33'38		minimum elong	2817 Feb 11 22:47	23°♄18'26	0°51'14
opposition	2811 Jun 10 20:16	20°♂16'03	1°46'34	max. Earth dist.	2817 Feb 11 18:32	23°♄17'10	10.93302 AU
min. Earth dist.	2811 Jun 10 21:58	20°♂15'44	8.95346 AU	morning rise	2817 Feb 28 16:54	25°♄17'41	
direct	2811 Aug 20 20:36	16°♂55'06			2817 Apr 15 05:49	0°♂	
evening set	2811 Dec 01 18:00	24°♂07'09		retrograde	2817 Jun 11 14:01	2°♂32'53	
					2817 Aug 10 15:49	30°♄♄	
conjunction	2811 Dec 18 11:34	26°♂05'37	1°16'21	opposition	2817 Aug 21 10:00	29°♄12'17	-1°-17'-55
minimum elong	2811 Dec 18 11:36	26°♂05'38	1°16'20	min. Earth dist.	2817 Aug 21 13:11	29°♄11'42	8.90043 AU
max. Earth dist.	2811 Dec 18 09:01	26°♂04'52	10.97703 AU	direct	2817 Oct 30 22:40	25°♄53'43	
morning rise	2812 Jan 04 03:07	28°♂03'31			2818 Jan 10 23:13	0°♂	
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retrograde	2812 Apr 13 03:31	5°♄05'01					

































































































































conjunction	2818 Feb 23 17:32	4° <del>✕</del> 59'39	-1°-15'-10	conjunction	2824 May 10 00:11	20° <del>8</del> 19'29	-2°-5'-22
minimum elong	2818 Feb 23 17:30	4° <del>✕</del> 59'39	1°15'11	minimum elong	2824 May 10 00:14	20° <del>8</del> 19'30	2°05'23
max. Earth dist.	2818 Feb 23 14:17	4° <del>✕</del> 58'40	10.86330 AU	max. Earth dist.	2824 May 10 01:45	20° <del>8</del> 19'59	10.27201 AU
morning rise	2818 Mar 12 13:06	7° <del>✕</del> 00'11		morning rise	2824 May 27 15:12	22° <del>8</del> 33'15	
retrograde	2818 Jun 24 05:11	14° <del>✕</del> 22'08			2824 Aug 14 03:23	0° <del>II</del>	
opposition	2818 Sep 02 22:22	11° <del>✕</del> 00'16	-1°-45'-51	retrograde	2824 Sep 11 09:06	0° <del>II</del> 41'34	
min. Earth dist.	2818 Sep 03 00:37	10° <del>✕</del> 59'51	8.82295 AU		2824 Oct 09 16:08	30° <del>R</del> <del>8</del>	
direct	2818 Nov 11 04:04	7° <del>✕</del> 41'17		opposition	2824 Nov 19 00:02	27° <del>8</del> 12'30	-2°-28'-3
evening set	2819 Feb 18 23:33	14° <del>✕</del> 51'26		min. Earth dist.	2824 Nov 18 22:16	27° <del>8</del> 12'51	8.22959 AU
				direct	2825 Jan 24 17:57	23° <del>8</del> 47'33	
conjunction	2819 Mar 07 17:57	16° <del>✕</del> 52'32	-1°-36'-16		2825 Apr 23 05:12	0° <del>II</del>	
minimum elong	2819 Mar 07 17:54	16° <del>✕</del> 52'32	1°36'17	evening set	2825 May 06 14:04	1° <del>II</del> 38'33	
max. Earth dist.	2819 Mar 07 15:14	16° <del>✕</del> 51'43	10.77841 AU				
morning rise	2819 Mar 24 15:27	18° <del>✕</del> 54'40		conjunction	2825 May 24 05:36	3° <del>II</del> 53'30	-1°-51'-24
retrograde	2819 Jul 07 01:43	26° <del>✕</del> 24'16		minimum elong	2825 May 24 05:39	3° <del>II</del> 53'31	1°51'24
opposition	2819 Sep 15 14:50	23° <del>✕</del> 01'02	-2°-9'-44	max. Earth dist.	2825 May 24 07:34	3° <del>II</del> 54'08	10.18867 AU
min. Earth dist.	2819 Sep 15 16:30	23° <del>✕</del> 00'43	8.73210 AU	morning rise	2825 Jun 11 01:03	6° <del>II</del> 09'43	
direct	2819 Nov 23 08:24	19° <del>✕</del> 41'24		retrograde	2825 Sep 25 17:29	14° <del>II</del> 22'31	
evening set	2820 Mar 02 05:00	26° <del>✕</del> 56'41		opposition	2825 Dec 02 20:17	10° <del>II</del> 53'01	-2°-6'-41
				min. Earth dist.	2825 Dec 02 18:12	10° <del>II</del> 53'26	8.15428 AU
conjunction	2820 Mar 19 01:10	28° <del>✕</del> 59'30	-1°-53'-28	direct	2826 Feb 07 10:23	7° <del>II</del> 26'53	
minimum elong	2820 Mar 19 01:08	28° <del>✕</del> 59'29	1°53'30	evening set	2826 May 20 23:01	15° <del>II</del> 24'43	
max. Earth dist.	2820 Mar 18 22:27	28° <del>✕</del> 58'40	10.68208 AU				
	2820 Mar 27 07:11	0° <del>Y</del>		conjunction	2826 Jun 07 19:04	17° <del>II</del> 41'57	-1°-30'-52
morning rise	2820 Apr 05 01:13	1° <del>Y</del> 03'31		minimum elong	2826 Jun 07 19:08	17° <del>II</del> 41'58	1°30'52
retrograde	2820 Jul 19 04:46	8° <del>Y</del> 41'24		max. Earth dist.	2826 Jun 07 21:12	17° <del>II</del> 42'38	10.12312 AU
opposition	2820 Sep 27 11:50	5° <del>Y</del> 16'46	-2°-28'-19	morning rise	2826 Jun 25 18:28	20° <del>II</del> 00'14	
min. Earth dist.	2820 Sep 27 13:23	5° <del>Y</del> 16'28	8.63186 AU	retrograde	2826 Oct 10 03:17	28° <del>II</del> 15'30	
direct	2820 Dec 04 18:03	1° <del>Y</del> 56'16		opposition	2826 Dec 16 19:36	24° <del>II</del> 45'53	-1°-37'-37
evening set	2821 Mar 14 18:05	9° <del>Y</del> 17'44		min. Earth dist.	2826 Dec 16 17:30	24° <del>II</del> 46'19	8.09894 AU
				direct	2827 Feb 21 09:25	21° <del>II</del> 18'43	
conjunction	2821 Mar 31 16:48	11° <del>Y</del> 22'36	-2°-5'-48	evening set	2827 Jun 04 14:51	29° <del>II</del> 22'20	
minimum elong	2821 Mar 31 16:46	11° <del>Y</del> 22'35	2°05'49		2827 Jun 09 13:04	0° <del>☾</del>	
max. Earth dist.	2821 Mar 31 14:29	11° <del>Y</del> 21'53	10.57851 AU				
morning rise	2821 Apr 17 19:58	13° <del>Y</del> 28'48		conjunction	2827 Jun 22 14:52	1° <del>☾</del> 41'21	-1°-4'-47
retrograde	2821 Aug 01 14:09	21° <del>Y</del> 15'08		minimum elong	2827 Jun 22 14:54	1° <del>☾</del> 41'22	1°04'48
opposition	2821 Oct 10 13:31	17° <del>Y</del> 49'09	-2°-40'-22	max. Earth dist.	2827 Jun 22 17:35	1° <del>☾</del> 42'14	10.07958 AU
min. Earth dist.	2821 Oct 10 14:50	17° <del>Y</del> 48'54	8.52659 AU	morning rise	2827 Jul 10 17:15	4° <del>☾</del> 01'07	
direct	2821 Dec 17 08:37	14° <del>Y</del> 27'39		retrograde	2827 Oct 24 13:28	12° <del>☾</del> 16'38	
evening set	2822 Mar 27 15:30	21° <del>Y</del> 56'07		opposition	2827 Dec 30 20:54	8° <del>☾</del> 47'16	-1°-2'-24
				min. Earth dist.	2827 Dec 30 18:22	8° <del>☾</del> 47'47	8.06730 AU
conjunction	2822 Apr 13 17:38	24° <del>Y</del> 03'17	-2°-12'-20	direct	2828 Mar 06 13:18	5° <del>☾</del> 19'13	
minimum elong	2822 Apr 13 17:38	24° <del>Y</del> 03'17	2°12'21	evening set	2828 Jun 18 11:49	13° <del>☾</del> 27'11	
max. Earth dist.	2822 Apr 13 16:39	24° <del>Y</del> 02'59	10.47227 AU				
morning rise	2822 May 01 00:20	26° <del>Y</del> 11'54		conjunction	2828 Jul 06 14:40	15° <del>☾</del> 47'18	0°-34'-40
	2822 Jun 03 10:03	0° <del>8</del>		minimum elong	2828 Jul 06 14:42	15° <del>☾</del> 47'19	0°34'41
retrograde	2822 Aug 15 05:38	4° <del>8</del> 06'28		max. Earth dist.	2828 Jul 06 18:12	15° <del>☾</del> 48'27	10.06099 AU
opposition	2822 Oct 23 20:12	0° <del>8</del> 39'14	-2°-44'-48	morning rise	2828 Jul 24 18:40	18° <del>☾</del> 07'46	
min. Earth dist.	2822 Oct 23 20:35	0° <del>8</del> 39'10	8.42100 AU	retrograde	2828 Nov 06 22:57	26° <del>☾</del> 21'21	
	2822 Nov 01 04:22	30° <del>R</del> <del>Y</del>		opposition	2829 Jan 12 22:54	22° <del>☾</del> 52'34	0°-23'-16
direct	2822 Dec 30 06:09	27° <del>Y</del> 16'39		min. Earth dist.	2829 Jan 12 19:43	22° <del>☾</del> 53'13	8.06153 AU
	2823 Feb 24 13:53	0° <del>8</del>		direct	2829 Mar 20 19:54	19° <del>☾</del> 23'52	
evening set	2823 Apr 09 21:48	4° <del>8</del> 52'36		evening set	2829 Jul 03 11:45	27° <del>☾</del> 34'32	
conjunction	2823 Apr 27 04:01	7° <del>8</del> 02'19	-2°-12'-20	conjunction	2829 Jul 21 15:49	29° <del>☾</del> 54'53	0°-2'-29
minimum elong	2823 Apr 27 04:01	7° <del>8</del> 02'19	2°12'20	minimum elong	2829 Jul 21 15:50	29° <del>☾</del> 54'53	0°02'29
max. Earth dist.	2823 Apr 27 04:36	7° <del>8</del> 02'30	10.36831 AU	behind sun begin	2829 Jul 21 08:29	29° <del>☾</del> 52'31	
morning rise	2823 May 14 14:40	9° <del>8</del> 13'29		behind sun end	2829 Jul 21 23:11	29° <del>☾</del> 57'14	
	2823 Jul 07 18:44	15° <del>8</del>		max. Earth dist.	2829 Jul 21 20:05	29° <del>☾</del> 56'13	10.06860 AU
retrograde	2823 Aug 29 03:54	17° <del>8</del> 15'34			2829 Jul 22 07:41	0° <del>9</del>	
	2823 Oct 21 19:37	15° <del>R</del> <del>8</del>		morning rise	2829 Aug 08 19:39	2° <del>9</del> 15'08	
opposition	2823 Nov 06 07:50	13° <del>8</del> 47'17	-2°-40'-49	asc. node	2829 Aug 18 23:38	3° <del>9</del> 31'21	
min. Earth dist.	2823 Nov 06 06:54	13° <del>8</del> 47'28	8.32020 AU	retrograde	2829 Nov 21 06:16	10° <del>9</del> 24'45	
direct	2824 Jan 12 09:44	10° <del>8</del> 23'33		opposition	2830 Jan 27 00:13	6° <del>9</del> 56'50	0°17'11
	2824 Mar 27 03:58	15° <del>8</del>		min. Earth dist.	2830 Jan 26 20:24	6° <del>9</del> 57'37	8.08214 AU
evening set	2824 Apr 22 13:27	18° <del>8</del> 07'07		direct	2830 Apr 04 04:46	3° <del>9</del> 27'47	
				evening set	2830 Jul 18 11:46	11° <del>9</del> 39'14	



conjunction	2830 Aug 05 15:20	13°♏58'55	0°29'51	conjunction	2836 Oct 26 06:18	3°♍38'50	2°13'14
minimum elong	2830 Aug 05 15:19	13°♏58'54	0°29'51	minimum elong	2836 Oct 26 06:18	3°♍38'50	2°13'13
max. Earth dist.	2830 Aug 05 20:12	14°♏00'29	10.10206 AU	max. Earth dist.	2836 Oct 26 05:50	3°♍38'41	10.63382 AU
	2830 Aug 13 12:39	15°♏		morning rise	2836 Nov 12 06:23	5°♍43'09	
morning rise	2830 Aug 23 17:18	16°♏18'06		retrograde	2837 Feb 20 05:49	13°♍02'06	
retrograde	2830 Dec 05 08:48	24°♏22'03		opposition	2837 Apr 29 06:41	9°♍42'31	2°42'17
opposition	2831 Feb 09 23:47	20°♏55'13	0°56'19	min. Earth dist.	2837 Apr 29 07:16	9°♍42'25	8.68349 AU
min. Earth dist.	2831 Feb 09 19:46	20°♏56'03	8.12793 AU	direct	2837 Jul 08 15:47	6°♍17'46	
direct	2831 Apr 18 13:55	17°♏26'06		evening set	2837 Oct 21 19:51	13°♍52'29	
evening set	2831 Aug 02 08:57	25°♏36'21			2837 Oct 31 04:35	15°♍	
conjunction	2831 Aug 20 10:24	27°♏54'31	1°00'04	conjunction	2837 Nov 07 20:59	15°♍55'59	2°09'02
minimum elong	2831 Aug 20 10:21	27°♏54'30	1°00'04	minimum elong	2837 Nov 07 21:01	15°♍55'59	2°09'02
max. Earth dist.	2831 Aug 20 15:14	27°♏56'04	10.15925 AU	max. Earth dist.	2837 Nov 07 19:40	15°♍55'35	10.72844 AU
	2831 Sep 05 19:25	0°♐		morning rise	2837 Nov 24 17:53	17°♍58'15	
morning rise	2831 Sep 07 09:06	0°♐11'52		retrograde	2838 Mar 04 11:46	25°♍11'28	
retrograde	2831 Dec 19 05:14	8°♐08'53		opposition	2838 May 11 23:53	21°♍52'41	2°33'18
opposition	2832 Feb 23 20:20	4°♐43'17	1°31'38	min. Earth dist.	2838 May 12 01:45	21°♍52'20	8.77356 AU
min. Earth dist.	2832 Feb 23 16:56	4°♐43'59	8.19589 AU	direct	2838 Jul 21 16:27	18°♍29'01	
direct	2832 May 01 21:40	1°♐14'21		evening set	2838 Nov 03 05:41	25°♍56'36	
evening set	2832 Aug 16 01:01	9°♐21'30					
conjunction	2832 Sep 02 22:58	11°♐37'31	1°26'27	conjunction	2838 Nov 20 03:53	27°♍58'15	1°59'10
minimum elong	2832 Sep 02 22:55	11°♐37'30	1°26'26	minimum elong	2838 Nov 20 03:55	27°♍58'16	1°59'11
max. Earth dist.	2832 Sep 03 02:48	11°♐38'45	10.23639 AU	max. Earth dist.	2838 Nov 20 01:03	27°♍57'24	10.81328 AU
morning rise	2832 Sep 20 17:22	13°♐52'27		morning rise	2838 Dec 06 22:30	29°♍58'52	
retrograde	2832 Dec 31 18:53	21°♐41'39			2838 Dec 07 02:21	0°♑	
opposition	2833 Mar 08 12:49	18°♐17'23	2°01'08	retrograde	2839 Mar 16 14:21	7°♑07'20	
min. Earth dist.	2833 Mar 08 10:21	18°♐17'52	8.28151 AU	opposition	2839 May 24 13:03	3°♑49'08	2°17'51
direct	2833 May 16 02:09	14°♐48'52		min. Earth dist.	2839 May 24 15:35	3°♑48'39	8.85206 AU
evening set	2833 Aug 30 09:28	22°♐51'14		direct	2839 Aug 03 11:21	0°♑26'30	
				evening set	2839 Nov 15 08:01	7°♑47'27	
conjunction	2833 Sep 17 03:05	25°♐04'42	1°47'37	conjunction	2839 Dec 02 04:00	9°♑47'38	1°44'21
minimum elong	2833 Sep 17 03:02	25°♐04'41	1°47'36	minimum elong	2839 Dec 02 04:02	9°♑47'39	1°44'22
max. Earth dist.	2833 Sep 17 05:32	25°♐05'28	10.32847 AU	max. Earth dist.	2839 Dec 02 00:33	9°♑46'36	10.88505 AU
morning rise	2833 Oct 04 16:41	27°♐16'53		morning rise	2839 Dec 18 21:00	11°♑46'57	
	2833 Oct 27 16:15	0°♑		retrograde	2840 Mar 27 13:51	18°♑51'54	
retrograde	2834 Jan 14 01:01	4°♑57'55		opposition	2840 Jun 04 23:07	15°♑34'00	1°56'52
opposition	2834 Mar 22 00:44	1°♑34'57	2°23'25	min. Earth dist.	2840 Jun 05 01:30	15°♑33'33	8.91590 AU
min. Earth dist.	2834 Mar 21 23:06	1°♑35'16	8.37918 AU	direct	2840 Aug 15 00:06	12°♑12'21	
	2834 Apr 11 16:09	30°♒♐		evening set	2840 Nov 26 04:06	19°♑27'24	
direct	2834 May 30 03:03	28°♐07'07					
	2834 Jul 16 20:12	0°♑		conjunction	2840 Dec 12 22:29	21°♑26'28	1°25'23
evening set	2834 Sep 13 08:32	6°♑03'21		minimum elong	2840 Dec 12 22:32	21°♑26'28	1°25'23
conjunction	2834 Sep 30 21:35	8°♑14'05	2°02'40	max. Earth dist.	2840 Dec 12 19:31	21°♑25'35	10.94094 AU
minimum elong	2834 Sep 30 21:33	8°♑14'04	2°02'40	morning rise	2840 Dec 29 14:22	23°♑24'51	
max. Earth dist.	2834 Sep 30 22:34	8°♑14'23	10.42942 AU		2841 Mar 16 01:30	0°♑	
morning rise	2834 Oct 18 06:21	10°♑23'28		retrograde	2841 Apr 08 12:41	0°♑27'38	
retrograde	2835 Jan 26 23:29	17°♑56'31			2841 May 02 07:09	30°♒♑	
opposition	2835 Apr 04 07:31	14°♑34'45	2°37'46	opposition	2841 Jun 17 06:48	27°♑09'47	1°31'23
min. Earth dist.	2835 Apr 04 06:25	14°♑34'58	8.48240 AU	min. Earth dist.	2841 Jun 17 08:59	27°♑09'23	8.96276 AU
direct	2835 Jun 12 22:35	11°♑07'49		direct	2841 Aug 27 09:04	23°♑48'59	
evening set	2835 Sep 26 21:56	18°♑57'09			2841 Nov 29 05:11	0°♑	
				evening set	2841 Dec 07 19:39	0°♑59'09	
conjunction	2835 Oct 14 06:36	21°♑05'14	2°11'13	conjunction	2841 Dec 24 12:52	2°♑57'27	1°03'07
minimum elong	2835 Oct 14 06:35	21°♑05'13	2°11'12	minimum elong	2841 Dec 24 12:54	2°♑57'28	1°03'06
max. Earth dist.	2835 Oct 14 06:39	21°♑05'15	10.53290 AU	max. Earth dist.	2841 Dec 24 10:03	2°♑56'37	10.97894 AU
morning rise	2835 Oct 31 10:46	23°♑11'57		morning rise	2842 Jan 10 04:13	4°♑55'16	
	2836 Jan 13 04:38	0°♒		retrograde	2842 Apr 20 11:06	11°♑57'16	
retrograde	2836 Feb 08 17:02	0°♒37'35		opposition	2842 Jun 29 12:45	8°♑39'15	1°02'28
	2836 Mar 06 13:55	30°♒♑		min. Earth dist.	2842 Jun 29 15:35	8°♑38'44	8.99110 AU
opposition	2836 Apr 16 09:17	27°♑16'58	2°43'58	direct	2842 Sep 08 12:11	5°♑19'09	
min. Earth dist.	2836 Apr 16 08:51	27°♑17'03	8.58525 AU	evening set	2842 Dec 19 08:11	12°♑25'39	
direct	2836 Jun 25 11:03	23°♑51'05					
	2836 Sep 25 20:16	0°♒		conjunction	2843 Jan 05 00:29	14°♑23'31	0°38'27
evening set	2836 Oct 09 01:36	1°♒33'11		minimum elong	2843 Jan 05 00:31	14°♑23'32	0°38'26



max. Earth dist.	2843 Jan 04 20:43	14°  22'24	10.99781 AU	direct	2848 Nov 17 15:14	14°  55'59	
morning rise	2843 Jan 21 15:58	16°  21'10		evening set	2849 Feb 25 11:18	22°  09'22	
retrograde	2843 May 02 07:32	23°  23'48					
opposition	2843 Jul 11 18:00	20°  05'26	0°31'12	conjunction	2849 Mar 14 06:41	24°  11'30	-1°-46'-50
min. Earth dist.	2843 Jul 11 21:19	20°  04'49	8.99993 AU	minimum elong	2849 Mar 14 06:39	24°  11'30	1°46'51
direct	2843 Sep 20 12:47	16°  04'52		max. Earth dist.	2849 Mar 14 05:36	24°  11'10	10.71887 AU
evening set	2843 Dec 30 19:13	23°  50'04		morning rise	2849 Mar 31 05:38	26°  14'45	
					2849 May 04 04:22	0°  Υ	
conjunction	2844 Jan 16 11:03	25°  04'49	0°12'19	retrograde	2849 Jul 14 01:10	3°  Υ49'23	
minimum elong	2844 Jan 16 11:03	25°  04'49	0°12'19	opposition	2849 Sep 22 12:07	0°  Υ25'20	-2°-21'-16
behind sun begin	2844 Jan 16 06:21	25°  04'27		min. Earth dist.	2849 Sep 22 12:26	0°  Υ25'16	8.67322 AU
behind sun end	2844 Jan 16 15:46	25°  04'12			2849 Sep 28 00:48	30°  R  X	
max. Earth dist.	2844 Jan 16 07:07	25°  04'40	10.99684 AU	direct	2849 Nov 29 23:56	27°  X05'19	
morning rise	2844 Feb 02 02:56	27°  04'53			2850 Jan 28 07:28	0°  Υ	
	2844 Feb 22 04:46	0°  ≈		evening set	2850 Mar 09 21:22	4°  Υ24'16	
retrograde	2844 May 13 08:08	4°  ≈50'25					
desc. node	2844 Jul 07 22:13	2°  ≈37'04		conjunction	2850 Mar 26 19:03	6°  Υ28'15	-2°-1'-16
opposition	2844 Jul 22 23:22	1°  ≈31'28	0°-1'-17	minimum elong	2850 Mar 26 19:02	6°  Υ28'15	2°01'17
min. Earth dist.	2844 Jul 23 02:15	1°  ≈30'56	8.98889 AU	max. Earth dist.	2850 Mar 26 19:07	6°  Υ28'16	10.62400 AU
	2844 Aug 13 08:28	30°  R  Z		morning rise	2850 Apr 12 20:40	8°  Υ33'30	
direct	2844 Oct 01 13:58	28°  012'17		retrograde	2850 Jul 27 09:47	16°  Υ16'20	
	2844 Nov 17 23:39	0°  ≈		opposition	2850 Oct 05 11:52	12°  Υ51'07	-2°-36'-6
evening set	2845 Jan 10 06:24	5°  ≈15'32		min. Earth dist.	2850 Oct 05 11:12	12°  Υ51'15	8.57572 AU
				direct	2850 Dec 12 11:12	9°  Υ30'23	
conjunction	2845 Jan 26 22:14	7°  ≈13'32	0°-14'-25	evening set	2851 Mar 22 15:30	16°  Υ55'48	
minimum elong	2845 Jan 26 22:14	7°  ≈13'32	0°14'25				
behind sun begin	2845 Jan 26 18:54	7°  ≈12'33		conjunction	2851 Apr 08 16:04	19°  Υ01'54	-2°-10'-15
behind sun end	2845 Jan 27 01:34	7°  ≈14'31		minimum elong	2851 Apr 08 16:03	19°  Υ01'54	2°10'16
max. Earth dist.	2845 Jan 26 19:21	7°  ≈12'41	10.97601 AU	max. Earth dist.	2851 Apr 08 16:35	19°  Υ02'04	10.52448 AU
morning rise	2845 Feb 12 14:43	9°  ≈11'46		morning rise	2851 Apr 25 21:02	21°  Υ09'24	
	2845 Apr 14 13:58	15°  ≈		retrograde	2851 Aug 09 23:21	29°  Υ00'22	
retrograde	2845 May 25 11:38	16°  ≈20'12		opposition	2851 Oct 18 16:44	25°  Υ34'03	-2°-43'-43
	2845 Jul 06 10:41	15°  R  ≈		min. Earth dist.	2851 Oct 18 15:35	25°  Υ34'17	8.47577 AU
opposition	2845 Aug 04 05:51	13°  ≈00'28	0°-33'-54	direct	2851 Dec 25 05:16	22°  Υ12'26	
min. Earth dist.	2845 Aug 04 07:44	13°  ≈00'07	8.95835 AU	evening set	2852 Apr 03 18:09	29°  Υ44'53	
direct	2845 Oct 13 11:53	9°  ≈41'32			2852 Apr 05 19:17	0°  8	
	2846 Jan 06 08:15	15°  ≈					
evening set	2846 Jan 21 19:19	16°  ≈45'14		conjunction	2852 Apr 20 22:20	1°  853'21	-2°-12'-59
				minimum elong	2852 Apr 20 22:20	1°  853'21	2°13'00
conjunction	2846 Feb 07 11:26	18°  ≈43'48	0°-40'-40	max. Earth dist.	2852 Apr 20 22:58	1°  853'33	10.42501 AU
minimum elong	2846 Feb 07 11:25	18°  ≈43'47	0°40'40	morning rise	2852 May 08 07:15	4°  803'17	
max. Earth dist.	2846 Feb 07 08:58	18°  ≈43'03	10.93596 AU	retrograde	2852 Aug 22 18:56	12°  801'49	
morning rise	2846 Feb 24 04:56	20°  ≈42'49		opposition	2852 Oct 31 02:29	8°  834'31	-2°-43'-14
retrograde	2846 Jun 06 19:14	27°  ≈56'12		min. Earth dist.	2852 Oct 31 01:25	8°  834'43	8.37807 AU
opposition	2846 Aug 16 14:22	24°  ≈35'33	-1°-5'-26	direct	2853 Jan 06 06:18	5°  811'50	
min. Earth dist.	2846 Aug 16 16:06	24°  ≈35'14	8.90928 AU	evening set	2853 Apr 17 05:54	12°  851'35	
direct	2846 Oct 25 10:43	21°  ≈16'38					
evening set	2847 Feb 02 11:38	28°  ≈22'15		conjunction	2853 May 04 14:26	15°  802'35	-2°-8'-55
	2847 Feb 16 04:01	0°  X		minimum elong	2853 May 04 14:28	15°  802'35	2°08'55
					2853 May 04 06:18	15°  8	
conjunction	2847 Feb 19 04:14	0°  X21'41	-1°-5'-30	max. Earth dist.	2853 May 04 15:42	15°  802'59	10.33016 AU
minimum elong	2847 Feb 19 04:12	0°  X21'40	1°05'31	morning rise	2853 May 22 03:38	17°  815'02	
max. Earth dist.	2847 Feb 19 01:23	0°  X20'50	10.87811 AU	retrograde	2853 Sep 05 20:09	25°  820'01	
morning rise	2847 Mar 07 23:11	2°  X21'48		opposition	2853 Nov 13 16:34	21°  851'54	-2°-34'-5
retrograde	2847 Jun 19 07:44	9°  X41'19		min. Earth dist.	2853 Nov 13 15:21	21°  852'09	8.28707 AU
opposition	2847 Aug 29 01:45	6°  X19'39	-1°-34'-41	direct	2854 Jan 19 13:22	18°  828'04	
min. Earth dist.	2847 Aug 29 03:39	6°  X19'18	8.84354 AU	evening set	2854 May 01 02:28	26°  815'05	
direct	2847 Nov 06 10:58	3°  X00'33					
evening set	2848 Feb 14 08:33	10°  X09'26		conjunction	2854 May 18 15:48	28°  828'39	-1°-57'-50
				minimum elong	2854 May 18 15:51	28°  828'40	1°57'50
conjunction	2848 Mar 02 02:11	12°  X10'03	-1°-27'-54	max. Earth dist.	2854 May 18 17:46	28°  829'17	10.24419 AU
minimum elong	2848 Mar 02 02:09	12°  X10'02	1°27'56		2854 May 30 14:48	0°  II	
max. Earth dist.	2848 Mar 01 23:35	12°  X09'15	10.80477 AU	morning rise	2854 Jun 05 09:19	0°  II43'33	
morning rise	2848 Mar 18 22:58	14°  X11'35		retrograde	2854 Sep 20 01:43	8°  II53'35	
retrograde	2848 Jul 01 00:37	21°  X38'17		opposition	2854 Nov 27 10:46	5°  II24'54	-2°-16'-15
opposition	2848 Sep 09 16:52	18°  X15'28	-2°00'-23	min. Earth dist.	2854 Nov 27 09:05	5°  II25'14	8.20685 AU
min. Earth dist.	2848 Sep 09 18:24	18°  X15'10	8.76378 AU	direct	2855 Feb 02 03:23	1°  II59'55	



evening set	2855 May 15 07:16	9°II53'52		retrograde	2860 Dec 12 15:03	2°mp31'04	
					2861 Feb 05 21:52	30°RQ	
conjunction	2855 Jun 02 01:25	12°II09'50	-1°-39'-58	opposition	2861 Feb 17 07:30	29°Q04'50	1°17'11
minimum elong	2855 Jun 02 01:28	12°II09'51	1°39'59	min. Earth dist.	2861 Feb 17 05:07	29°Q05'19	8.16899 AU
max. Earth dist.	2855 Jun 02 04:11	12°II10'44	10.17135 AU	direct	2861 Apr 26 05:47	25°Q35'35	
morning rise	2855 Jun 19 22:59	14°II26'57			2861 Jul 09 08:03	0°mp	
retrograde	2855 Oct 04 10:26	22°II40'23		evening set	2861 Aug 10 03:34	3°mp43'38	
opposition	2855 Dec 11 08:23	19°II11'24	-1°-50'-19				
min. Earth dist.	2855 Dec 11 05:58	19°II11'53	8.14213 AU	conjunction	2861 Aug 28 03:06	6°mp00'31	1°15'44
direct	2856 Feb 15 22:52	15°II45'18		minimum elong	2861 Aug 28 03:03	6°mp00'30	1°15'44
evening set	2856 May 28 19:49	23°II45'29		max. Earth dist.	2861 Aug 28 05:37	6°mp01'19	10.20341 AU
				morning rise	2861 Sep 14 23:32	8°mp16'26	
conjunction	2856 Jun 15 18:16	26°II03'31	-1°-16'-7	retrograde	2861 Dec 26 06:58	16°mp08'37	
minimum elong	2856 Jun 15 18:19	26°II03'32	1°16'08	opposition	2862 Mar 03 01:00	12°mp43'29	1°49'18
max. Earth dist.	2856 Jun 15 21:32	26°II04'34	10.11667 AU	min. Earth dist.	2862 Mar 02 22:26	12°mp44'00	8.24285 AU
morning rise	2856 Jul 03 19:15	28°II22'24		direct	2862 May 10 10:38	9°mp14'27	
	2856 Jul 16 22:30	0°Q		evening set	2862 Aug 24 14:34	17°mp18'34	
retrograde	2856 Oct 17 21:05	6°Q37'05					
opposition	2856 Dec 24 08:18	3°Q08'06	-1°-17'-33	conjunction	2862 Sep 11 10:15	19°mp33'08	1°39'13
min. Earth dist.	2856 Dec 24 05:32	3°Q08'40	8.09794 AU	minimum elong	2862 Sep 11 10:12	19°mp33'07	1°39'13
	2857 Feb 10 11:31	30°RII		max. Earth dist.	2862 Sep 11 12:50	19°mp33'57	10.28511 AU
direct	2857 Feb 28 22:55	29°II40'58		morning rise	2862 Sep 29 01:59	21°mp46'29	
	2857 Mar 19 09:49	0°Q		retrograde	2863 Jan 08 17:03	29°mp30'51	
evening set	2857 Jun 12 14:23	7°Q46'12		opposition	2863 Mar 16 14:11	26°mp06'53	2°14'47
				min. Earth dist.	2863 Mar 16 12:00	26°mp07'19	8.33176 AU
conjunction	2857 Jun 30 16:06	10°Q05'40	0°-47'-33	direct	2863 May 24 11:26	22°mp38'21	
minimum elong	2857 Jun 30 16:09	10°Q05'41	0°47'34		2863 Sep 02 15:35	0°Q	
max. Earth dist.	2857 Jun 30 19:19	10°Q06'42	10.08451 AU	evening set	2863 Sep 07 17:11	0°Q37'06	
morning rise	2857 Jul 18 19:20	12°Q25'38					
retrograde	2857 Nov 01 07:40	20°Q39'21		conjunction	2863 Sep 25 08:29	2°Q49'03	1°56'58
opposition	2858 Jan 07 09:35	17°Q10'41	0°-39'-54	minimum elong	2863 Sep 25 08:26	2°Q49'03	1°56'58
min. Earth dist.	2858 Jan 07 06:57	17°Q11'14	8.07786 AU	max. Earth dist.	2863 Sep 25 10:36	2°Q49'43	10.37931 AU
direct	2858 Mar 15 03:08	13°Q42'38		morning rise	2863 Oct 12 19:17	4°Q59'40	
evening set	2858 Jun 27 12:37	21°Q51'22		retrograde	2864 Jan 21 18:27	12°Q36'03	
				opposition	2864 Mar 28 22:43	9°Q13'20	2°32'36
conjunction	2858 Jul 15 16:09	24°Q11'27	0°-16'-4	min. Earth dist.	2864 Mar 28 21:32	9°Q13'34	8.43053 AU
minimum elong	2858 Jul 15 16:10	24°Q11'27	0°16'05	direct	2864 Jun 06 08:29	5°Q45'31	
max. Earth dist.	2858 Jul 15 19:11	24°Q12'26	10.07743 AU	evening set	2864 Sep 20 10:31	13°Q37'49	
morning rise	2858 Aug 02 20:03	26°Q31'39					
	2858 Aug 31 20:15	0°Q		conjunction	2864 Oct 07 21:10	15°Q47'05	2°08'21
retrograde	2858 Nov 15 15:42	4°Q42'18		minimum elong	2864 Oct 07 21:09	15°Q47'04	2°08'20
asc. node	2859 Jan 19 18:36	1°Q22'31		max. Earth dist.	2864 Oct 07 22:08	15°Q47'23	10.48075 AU
opposition	2859 Jan 21 10:46	1°Q14'14	0°00'11	morning rise	2864 Oct 25 03:15	17°Q54'58	
min. Earth dist.	2859 Jan 21 08:22	1°Q14'44	8.08355 AU	retrograde	2865 Feb 02 13:34	25°Q23'39	
	2859 Feb 05 19:31	30°RQ		opposition	2865 Apr 11 02:19	22°Q02'07	2°42'19
direct	2859 Mar 29 11:39	27°Q45'30		min. Earth dist.	2865 Apr 11 02:10	22°Q02'09	8.53390 AU
	2859 May 19 04:49	0°Q		direct	2865 Jun 19 23:24	18°Q35'17	
evening set	2859 Jul 12 12:04	5°Q55'56		evening set	2865 Oct 03 17:57	26°Q20'25	
conjunction	2859 Jul 30 15:48	8°Q15'45	0°16'22	conjunction	2865 Oct 21 00:15	28°Q27'06	2°13'10
minimum elong	2859 Jul 30 15:47	8°Q15'45	0°16'22	minimum elong	2865 Oct 21 00:15	28°Q27'06	2°13'10
max. Earth dist.	2859 Jul 30 18:32	8°Q16'37	10.09605 AU	max. Earth dist.	2865 Oct 20 23:47	28°Q26'57	10.58436 AU
morning rise	2859 Aug 17 18:45	10°Q35'18			2865 Nov 02 15:05	0°mL	
	2859 Sep 24 18:22	15°Q		morning rise	2865 Nov 07 02:11	0°mL32'27	
retrograde	2859 Nov 29 17:55	18°Q41'02		retrograde	2866 Feb 15 02:51	7°mL54'00	
opposition	2860 Feb 04 10:25	15°Q13'48	0°40'04	opposition	2866 Apr 24 01:05	4°mL33'34	2°44'01
min. Earth dist.	2860 Feb 04 08:13	15°Q14'15	8.11468 AU	min. Earth dist.	2866 Apr 24 01:13	4°mL33'32	8.63680 AU
	2860 Feb 07 05:40	15°RQ		direct	2866 Jul 03 07:38	1°mL07'52	
direct	2860 Apr 11 21:24	11°Q44'39		evening set	2866 Oct 16 15:33	8°mL45'30	
	2860 Jun 13 04:23	15°Q					
evening set	2860 Jul 26 09:58	19°Q54'51		conjunction	2866 Nov 02 18:09	10°mL49'52	2°11'38
				minimum elong	2866 Nov 02 18:09	10°mL49'53	2°11'38
conjunction	2860 Aug 13 12:19	22°Q13'34	0°47'36	max. Earth dist.	2866 Nov 02 17:11	10°mL49'35	10.68518 AU
minimum elong	2860 Aug 13 12:17	22°Q13'33	0°47'36	morning rise	2866 Nov 19 16:35	12°mL53'00	
max. Earth dist.	2860 Aug 13 14:44	22°Q14'21	10.13904 AU		2866 Dec 08 00:42	15°mL	
morning rise	2860 Aug 31 12:42	24°Q31'38		retrograde	2867 Feb 27 10:09	20°mL08'15	
	2860 Oct 20 00:17	0°mp		opposition	2867 May 06 19:15	16°mL48'46	2°38'08



min. Earth dist.	2867 May 06 19:23	16° $\mathbb{M}$ 48'45	8.73434 AU	direct	2873 Sep 26 13:22	23° $\mathfrak{Z}$ 20'19	
	2867 May 31 19:33	15° $\mathbb{R}$ $\mathbb{M}$		desc. node	2873 Dec 18 19:42	28° $\mathfrak{Z}$ 24'10	
direct	2867 Jul 16 10:49	13° $\mathbb{M}$ 24'19			2874 Jan 02 04:11	0° $\approx$	
	2867 Aug 30 03:19	15° $\mathbb{M}$		evening set	2874 Jan 05 12:28	0° $\approx$ 23'09	
evening set	2867 Oct 29 04:20	20° $\mathbb{M}$ 54'34					
				conjunction	2874 Jan 22 04:10	2° $\approx$ 20'48	0°-2'-29
conjunction	2867 Nov 15 03:53	22° $\mathbb{M}$ 56'55	2°04'11	minimum elong	2874 Jan 22 04:09	2° $\approx$ 20'48	0°02'29
minimum elong	2867 Nov 15 03:54	22° $\mathbb{M}$ 56'56	2°04'11	behind sun begin	2874 Jan 21 21:10	2° $\approx$ 18'45	
max. Earth dist.	2867 Nov 15 02:59	22° $\mathbb{M}$ 56'39	10.77853 AU	behind sun end	2874 Jan 22 11:07	2° $\approx$ 22'50	
morning rise	2867 Dec 01 23:26	24° $\mathbb{M}$ 58'09		max. Earth dist.	2874 Jan 22 00:36	2° $\approx$ 19'48	11.00863 AU
	2868 Jan 19 20:39	0° $\mathfrak{Z}$		morning rise	2874 Feb 07 20:13	4° $\approx$ 18'35	
retrograde	2868 Mar 10 15:12	2° $\mathfrak{Z}$ 08'06		retrograde	2874 May 20 09:41	11° $\approx$ 24'27	
	2868 May 02 12:36	30° $\mathbb{R}$ $\mathbb{M}$		opposition	2874 Jul 30 02:31	8° $\approx$ 05'44	0°-19'-18
opposition	2868 May 18 09:23	28° $\mathbb{M}$ 49'27	2°25'25	min. Earth dist.	2874 Jul 30 05:48	8° $\approx$ 05'07	8.99518 AU
min. Earth dist.	2868 May 18 09:54	28° $\mathbb{M}$ 49'21	8.82222 AU	direct	2874 Oct 08 11:11	4° $\approx$ 47'16	
direct	2868 Jul 28 06:30	25° $\mathbb{M}$ 26'15		evening set	2875 Jan 17 00:22	11° $\approx$ 50'00	
	2868 Oct 15 01:03	0° $\mathfrak{Z}$					
evening set	2868 Nov 09 09:18	2° $\mathfrak{Z}$ 49'32		conjunction	2875 Feb 02 16:06	13° $\approx$ 48'03	0°-28'-58
				minimum elong	2875 Feb 02 16:05	13° $\approx$ 48'02	0°28'58
conjunction	2868 Nov 26 06:19	4° $\mathfrak{Z}$ 50'14	1°51'28	max. Earth dist.	2875 Feb 02 11:49	13° $\approx$ 46'46	10.97636 AU
minimum elong	2868 Nov 26 06:22	4° $\mathfrak{Z}$ 50'15	1°51'29		2875 Feb 12 18:35	15° $\approx$	
max. Earth dist.	2868 Nov 26 05:11	4° $\mathfrak{Z}$ 49'54	10.86045 AU	morning rise	2875 Feb 19 09:07	15° $\approx$ 46'28	
morning rise	2868 Dec 12 23:49	6° $\mathfrak{Z}$ 49'57		retrograde	2875 Jun 01 14:17	22° $\approx$ 56'46	
retrograde	2869 Mar 22 16:16	13° $\mathfrak{Z}$ 55'47		opposition	2875 Aug 11 09:50	19° $\approx$ 37'10	0°-51'-24
opposition	2869 May 30 20:21	10° $\mathfrak{Z}$ 37'45	2°06'45	min. Earth dist.	2875 Aug 11 13:12	19° $\approx$ 36'32	8.95238 AU
min. Earth dist.	2869 May 30 21:56	10° $\mathfrak{Z}$ 37'28	8.89697 AU	direct	2875 Oct 20 11:06	16° $\approx$ 18'46	
direct	2869 Aug 09 19:39	7° $\mathfrak{Z}$ 15'45		evening set	2876 Jan 28 14:43	23° $\approx$ 22'51	
evening set	2869 Nov 21 07:33	14° $\mathfrak{Z}$ 32'45					
				conjunction	2876 Feb 14 06:59	25° $\approx$ 21'40	0°-54'-31
conjunction	2869 Dec 08 02:31	16° $\mathfrak{Z}$ 32'08	1°34'15	minimum elong	2876 Feb 14 06:57	25° $\approx$ 21'40	0°54'32
minimum elong	2869 Dec 08 02:33	16° $\mathfrak{Z}$ 32'09	1°34'15	max. Earth dist.	2876 Feb 14 03:24	25° $\approx$ 20'36	10.92336 AU
max. Earth dist.	2869 Dec 08 00:12	16° $\mathfrak{Z}$ 31'27	10.92776 AU	morning rise	2876 Mar 02 01:06	27° $\approx$ 21'05	
morning rise	2869 Dec 24 18:49	18° $\mathfrak{Z}$ 30'46			2876 Mar 25 19:16	0° $\mathfrak{H}$	
retrograde	2870 Apr 03 13:41	25° $\mathfrak{Z}$ 33'46		retrograde	2876 Jun 13 01:23	4° $\mathfrak{H}$ 37'11	
opposition	2870 Jun 12 04:35	22° $\mathfrak{Z}$ 16'07	1°43'09	opposition	2876 Aug 22 19:45	1° $\mathfrak{H}$ 16'29	-1°-21'-47
min. Earth dist.	2870 Jun 12 06:53	22° $\mathfrak{Z}$ 15'41	8.95573 AU	min. Earth dist.	2876 Aug 22 22:20	1° $\mathfrak{H}$ 16'00	8.89007 AU
direct	2870 Aug 22 05:56	18° $\mathfrak{Z}$ 55'11			2876 Sep 09 07:51	30° $\mathbb{R}$ $\approx$	
evening set	2870 Dec 03 00:44	26° $\mathfrak{Z}$ 06'52		direct	2876 Oct 31 10:57	27° $\approx$ 57'56	
					2876 Dec 20 09:28	0° $\mathfrak{H}$	
conjunction	2870 Dec 19 18:16	28° $\mathfrak{Z}$ 05'18	1°13'21	evening set	2877 Feb 08 09:17	5° $\mathfrak{H}$ 04'47	
minimum elong	2870 Dec 19 18:18	28° $\mathfrak{Z}$ 05'19	1°13'20				
max. Earth dist.	2870 Dec 19 15:12	28° $\mathfrak{Z}$ 04'23	10.97789 AU	conjunction	2877 Feb 25 02:27	7° $\mathfrak{H}$ 04'42	-1°-18'-8
	2871 Jan 04 22:58	0° $\mathfrak{Z}$		minimum elong	2877 Feb 25 02:25	7° $\mathfrak{H}$ 04'41	1°18'09
morning rise	2871 Jan 05 09:55	0° $\mathfrak{Z}$ 03'11		max. Earth dist.	2877 Feb 24 23:25	7° $\mathfrak{H}$ 03'47	10.85218 AU
retrograde	2871 Apr 15 11:19	7° $\mathfrak{Z}$ 04'44		morning rise	2877 Mar 13 22:07	9° $\mathfrak{H}$ 05'25	
opposition	2871 Jun 24 10:38	3° $\mathfrak{Z}$ 47'12	1°15'39	retrograde	2877 Jun 25 16:26	16° $\mathfrak{H}$ 28'25	
min. Earth dist.	2871 Jun 24 12:52	3° $\mathfrak{Z}$ 46'47	8.99622 AU	opposition	2877 Sep 04 08:56	13° $\mathfrak{H}$ 06'28	-1°-49'-13
direct	2871 Sep 03 11:48	0° $\mathfrak{Z}$ 27'12		min. Earth dist.	2877 Sep 04 10:59	13° $\mathfrak{H}$ 06'05	8.81128 AU
evening set	2871 Dec 14 14:14	7° $\mathfrak{Z}$ 34'40		direct	2877 Nov 12 12:34	9° $\mathfrak{H}$ 47'29	
				evening set	2878 Feb 20 09:17	16° $\mathfrak{H}$ 58'26	
conjunction	2871 Dec 31 06:52	9° $\mathfrak{Z}$ 32'30	0°49'40				
minimum elong	2871 Dec 31 06:54	9° $\mathfrak{Z}$ 32'31	0°49'39	conjunction	2878 Mar 09 03:44	18° $\mathfrak{H}$ 59'46	-1°-38'-44
max. Earth dist.	2871 Dec 31 04:19	9° $\mathfrak{Z}$ 31'45	11.00886 AU	minimum elong	2878 Mar 09 03:42	18° $\mathfrak{H}$ 59'45	1°38'46
morning rise	2872 Jan 16 22:10	11° $\mathfrak{Z}$ 30'00		max. Earth dist.	2878 Mar 09 00:24	18° $\mathfrak{H}$ 58'45	10.76620 AU
retrograde	2872 Apr 26 09:13	18° $\mathfrak{Z}$ 31'33		morning rise	2878 Mar 26 01:33	21° $\mathfrak{H}$ 02'08	
opposition	2872 Jul 05 15:50	15° $\mathfrak{Z}$ 13'52	0°45'20	retrograde	2878 Jul 08 14:05	28° $\mathfrak{H}$ 32'51	
min. Earth dist.	2872 Jul 05 17:41	15° $\mathfrak{Z}$ 13'31	9.01686 AU	opposition	2878 Sep 17 02:11	25° $\mathfrak{H}$ 09'33	-2°-12'-27
direct	2872 Sep 14 13:46	11° $\mathfrak{Z}$ 54'37		min. Earth dist.	2878 Sep 17 04:20	25° $\mathfrak{H}$ 09'09	8.71952 AU
evening set	2872 Dec 25 01:32	18° $\mathfrak{Z}$ 59'05		direct	2878 Nov 24 18:28	21° $\mathfrak{H}$ 49'52	
				evening set	2879 Mar 04 15:47	29° $\mathfrak{H}$ 06'05	
conjunction	2873 Jan 10 17:35	20° $\mathfrak{Z}$ 56'40	0°24'06		2879 Mar 12 02:05	0° $\mathfrak{Y}$	
minimum elong	2873 Jan 10 17:36	20° $\mathfrak{Z}$ 56'40	0°24'06				
max. Earth dist.	2873 Jan 10 15:06	20° $\mathfrak{Z}$ 55'56	11.01936 AU	conjunction	2879 Mar 21 12:08	1° $\mathfrak{Y}$ 09'09	-1°-55'-20
morning rise	2873 Jan 27 09:00	22° $\mathfrak{Z}$ 54'07		minimum elong	2879 Mar 21 12:06	1° $\mathfrak{Y}$ 09'08	1°55'21
retrograde	2873 May 08 09:28	29° $\mathfrak{Z}$ 57'07		max. Earth dist.	2879 Mar 21 09:06	1° $\mathfrak{Y}$ 08'13	10.66919 AU
opposition	2873 Jul 17 20:56	26° $\mathfrak{Z}$ 39'02	0°13'19	morning rise	2879 Apr 07 12:32	3° $\mathfrak{Y}$ 13'27	
min. Earth dist.	2873 Jul 17 23:16	26° $\mathfrak{Z}$ 38'37	9.01671 AU	retrograde	2879 Jul 21 17:50	10° $\mathfrak{Y}$ 52'27	



opposition	2879 Sep 29 23:55	7°Υ27'45	-2°-30'-12	morning rise	2885 Jun 27 11:53	22°Π21'49	
min. Earth dist.	2879 Sep 30 01:47	7°Υ27'23	8.61886 AU		2885 Sep 15 14:00	0°Ϣ	
direct	2879 Dec 07 04:18	4°Υ07'12		retrograde	2885 Oct 11 18:12	0°Ϣ36'59	
evening set	2880 Mar 16 05:52	11°Υ29'40			2885 Nov 07 00:37	30°RΠ	
				opposition	2885 Dec 18 10:44	27°Π07'21	-1°-33'-8
conjunction	2880 Apr 02 04:58	13°Υ34'47	-2°-6'-54	min. Earth dist.	2885 Dec 18 08:35	27°Π07'47	8.09652 AU
minimum elong	2880 Apr 02 04:57	13°Υ34'47	2°06'56	direct	2886 Feb 23 01:23	23°Π40'02	
max. Earth dist.	2880 Apr 02 03:17	13°Υ34'16	10.56550 AU		2886 May 23 08:41	0°Ϣ	
morning rise	2880 Apr 19 08:24	15°Υ41'16		evening set	2886 Jun 06 07:46	1°Ϣ43'53	
retrograde	2880 Aug 03 03:04	23°Υ28'43					
opposition	2880 Oct 12 02:25	20°Υ02'38	-2°-41'-15	conjunction	2886 Jun 24 08:11	4°Ϣ03'01	-1°00'-55
min. Earth dist.	2880 Oct 12 03:18	20°Υ02'28	8.51380 AU	minimum elong	2886 Jun 24 08:13	4°Ϣ03'02	1°00'56
direct	2880 Dec 18 21:20	16°Υ41'05		max. Earth dist.	2886 Jun 24 11:31	4°Ϣ04'06	10.07871 AU
evening set	2881 Mar 29 04:22	24°Υ10'31		morning rise	2886 Jul 12 10:45	6°Ϣ22'49	
				retrograde	2886 Oct 26 04:50	14°Ϣ37'57	
conjunction	2881 Apr 15 06:58	26°Υ18'00	-2°-12'-35	opposition	2887 Jan 01 11:55	11°Ϣ08'34	0°-57'-21
minimum elong	2881 Apr 15 06:58	26°Υ18'00	2°12'35	min. Earth dist.	2887 Jan 01 08:49	11°Ϣ09'12	8.06788 AU
max. Earth dist.	2881 Apr 15 06:54	26°Υ17'59	10.45980 AU	direct	2887 Mar 09 04:43	7°Ϣ40'24	
morning rise	2881 May 02 13:58	28°Υ26'54		evening set	2887 Jun 21 04:41	15°Ϣ48'21	
	2881 May 15 12:32	0°Ϣ					
retrograde	2881 Aug 16 20:39	6°Ϣ22'28		conjunction	2887 Jul 09 07:46	18°Ϣ08'29	0°-30'-29
opposition	2881 Oct 25 09:49	2°Ϣ55'09	-2°-44'-34	minimum elong	2887 Jul 09 07:48	18°Ϣ08'29	0°30'30
min. Earth dist.	2881 Oct 25 09:23	2°Ϣ55'14	8.40909 AU	max. Earth dist.	2887 Jul 09 12:10	18°Ϣ09'54	10.06305 AU
	2881 Dec 09 02:12	30°RΥ		morning rise	2887 Jul 27 11:42	20°Ϣ28'53	
direct	2881 Dec 31 18:57	29°Υ32'29		retrograde	2887 Nov 09 14:35	28°Ϣ41'51	
	2882 Jan 23 05:04	0°Ϣ		opposition	2888 Jan 15 13:38	25°Ϣ13'02	0°-17'-58
evening set	2882 Apr 11 11:56	7°Ϣ09'20		min. Earth dist.	2888 Jan 15 09:49	25°Ϣ13'49	8.06497 AU
				direct	2888 Mar 22 11:32	21°Ϣ44'15	
conjunction	2882 Apr 28 18:35	9°Ϣ19'21	-2°-11'-40	asc. node	2888 Jul 02 00:55	29°Ϣ30'52	
minimum elong	2882 Apr 28 18:36	9°Ϣ19'22	2°11'40	evening set	2888 Jul 05 04:24	29°Ϣ54'41	
max. Earth dist.	2882 Apr 28 19:23	9°Ϣ19'36	10.35709 AU		2888 Jul 05 21:08	0°Ω	
morning rise	2882 May 16 05:39	11°Ϣ30'49					
	2882 Jun 15 04:40	15°Ϣ		conjunction	2888 Jul 23 08:31	2°Ω14'56	0°01'53
retrograde	2882 Aug 30 20:46	19°Ϣ33'40		minimum elong	2888 Jul 23 08:30	2°Ω14'56	0°01'53
opposition	2882 Nov 07 22:00	16°Ϣ05'19	-2°-39'-25	behind sun begin	2888 Jul 23 01:08	2°Ω12'34	
min. Earth dist.	2882 Nov 07 20:44	16°Ϣ05'34	8.30985 AU	behind sun end	2888 Jul 23 15:52	2°Ω17'17	
	2882 Nov 21 18:45	15°RϢ		max. Earth dist.	2888 Jul 23 13:24	2°Ω16'28	10.07339 AU
direct	2883 Jan 13 21:42	12°Ϣ41'28		morning rise	2888 Aug 10 12:07	4°Ω35'03	
	2883 Mar 06 06:04	15°Ϣ		retrograde	2888 Nov 22 20:44	12°Ω43'50	
evening set	2883 Apr 25 04:35	20°Ϣ25'53		opposition	2889 Jan 28 14:29	9°Ω15'56	0°22'24
				min. Earth dist.	2889 Jan 28 10:30	9°Ω16'45	8.08815 AU
conjunction	2883 May 12 15:44	22°Ϣ38'30	-2°-3'-45	direct	2889 Apr 05 20:06	5°Ω46'49	
minimum elong	2883 May 12 15:46	22°Ϣ38'31	2°03'45	evening set	2889 Jul 20 03:58	13°Ω57'53	
max. Earth dist.	2883 May 12 16:56	22°Ϣ38'53	10.26273 AU		2889 Jul 28 07:04	15°Ω	
morning rise	2883 May 30 07:16	24°Ϣ52'33					
	2883 Jul 15 06:15	0°Π		conjunction	2889 Aug 07 07:19	16°Ω17'21	0°33'53
retrograde	2883 Sep 14 01:39	3°Π01'21		minimum elong	2889 Aug 07 07:18	16°Ω17'21	0°33'53
	2883 Nov 15 21:09	30°RϢ		max. Earth dist.	2889 Aug 07 12:11	16°Ω18'55	10.10918 AU
opposition	2883 Nov 21 14:48	29°Ϣ32'15	-2°-25'-30	morning rise	2889 Aug 25 08:57	18°Ω36'18	
min. Earth dist.	2883 Nov 21 13:13	29°Ϣ32'34	8.22144 AU	retrograde	2889 Dec 06 22:21	26°Ω39'20	
direct	2884 Jan 27 08:17	26°Ϣ07'10		opposition	2890 Feb 11 13:32	23°Ω12'35	1°01'06
	2884 Apr 04 02:05	0°Π		min. Earth dist.	2890 Feb 11 09:58	23°Ω13'18	8.13605 AU
evening set	2884 May 08 05:57	3°Π58'52		direct	2890 Apr 20 04:33	19°Ω43'24	
				evening set	2890 Aug 04 00:25	27°Ω53'07	
conjunction	2884 May 25 21:54	6°Π14'02	-1°-48'-53		2890 Aug 20 14:59	0°η	
minimum elong	2884 May 25 21:57	6°Π14'03	1°48'53				
max. Earth dist.	2884 May 25 23:32	6°Π14'33	10.18190 AU	conjunction	2890 Aug 22 01:24	0°η11'02	1°03'39
morning rise	2884 Jun 12 17:53	8°Π30'28		minimum elong	2890 Aug 22 01:21	0°η11'01	1°03'39
retrograde	2884 Sep 27 08:39	16°Π43'29		max. Earth dist.	2890 Aug 22 05:37	0°η12'23	10.16821 AU
opposition	2884 Dec 04 11:24	13°Π13'56	-2°-3'-4	morning rise	2890 Sep 08 23:43	2°η28'05	
min. Earth dist.	2884 Dec 04 09:38	13°Π14'18	8.14886 AU	retrograde	2890 Dec 20 18:04	10°η24'09	
direct	2885 Feb 09 02:22	9°Π47'41		opposition	2891 Feb 25 09:30	6°η58'40	1°35'42
evening set	2885 May 22 15:32	17°Π45'59		min. Earth dist.	2891 Feb 25 06:39	6°η59'14	8.20566 AU
				direct	2891 May 04 11:43	3°η29'44	
conjunction	2885 Jun 09 12:04	20°Π03'24	-1°-27'-35	evening set	2891 Aug 18 15:28	11°η36'15	
minimum elong	2885 Jun 09 12:07	20°Π03'25	1°27'35				
max. Earth dist.	2885 Jun 09 14:19	20°Π04'07	10.11924 AU	conjunction	2891 Sep 05 12:54	13°η51'58	1°29'24



minimum elong	2891 Sep 05 12:50	13° $\mathring{M}$ 51'57	1°29'23	minimum elong	2897 Nov 21 11:50	0° $\mathring{Z}$ 00'45	1°57'24
max. Earth dist.	2891 Sep 05 15:59	13° $\mathring{M}$ 52'57	10.24678 AU	max. Earth dist.	2897 Nov 21 08:29	29° $\mathring{M}$ 59'45	10.82373 AU
morning rise	2891 Sep 23 06:55	16° $\mathring{M}$ 06'36			2897 Nov 21 09:20	0° $\mathring{Z}$	
retrograde	2892 Jan 03 06:27	23° $\mathring{M}$ 54'52		morning rise	2897 Dec 08 06:18	2° $\mathring{Z}$ 01'11	
opposition	2892 Mar 10 01:16	20° $\mathring{M}$ 30'43	2°04'19	retrograde	2898 Mar 17 21:52	9° $\mathring{Z}$ 09'11	
min. Earth dist.	2892 Mar 09 22:53	20° $\mathring{M}$ 31'11	8.29252 AU	opposition	2898 May 25 21:49	5° $\mathring{Z}$ 51'04	2°15'16
direct	2892 May 17 16:27	17° $\mathring{M}$ 02'17		min. Earth dist.	2898 May 26 00:01	5° $\mathring{Z}$ 50'39	8.86130 AU
evening set	2892 Aug 31 22:53	25° $\mathring{M}$ 03'56		direct	2898 Aug 04 20:20	2° $\mathring{Z}$ 28'38	
				evening set	2898 Nov 16 15:22	9° $\mathring{Z}$ 48'53	
conjunction	2892 Sep 18 16:03	27° $\mathring{M}$ 17'05	1°49'48	conjunction	2898 Dec 03 11:19	11° $\mathring{Z}$ 48'57	1°41'59
minimum elong	2892 Sep 18 16:00	27° $\mathring{M}$ 17'04	1°49'47	minimum elong	2898 Dec 03 11:21	11° $\mathring{Z}$ 48'58	1°41'59
max. Earth dist.	2892 Sep 18 18:15	27° $\mathring{M}$ 17'47	10.33993 AU	max. Earth dist.	2898 Dec 03 08:14	11° $\mathring{Z}$ 48'02	10.89302 AU
morning rise	2892 Oct 06 05:13	29° $\mathring{M}$ 28'59		morning rise	2898 Dec 20 04:10	13° $\mathring{Z}$ 48'09	
	2892 Oct 10 10:19	0° $\mathring{Z}$		retrograde	2899 Mar 29 22:05	20° $\mathring{Z}$ 52'51	
retrograde	2893 Jan 15 10:57	7° $\mathring{Z}$ 09'09		opposition	2899 Jun 07 07:34	17° $\mathring{Z}$ 35'01	1°53'38
opposition	2893 Mar 23 12:29	3° $\mathring{Z}$ 46'18	2°25'35	min. Earth dist.	2899 Jun 07 09:51	17° $\mathring{Z}$ 34'35	8.92241 AU
min. Earth dist.	2893 Mar 23 10:20	3° $\mathring{Z}$ 46'43	8.39113 AU	direct	2899 Aug 17 09:13	14° $\mathring{Z}$ 13'31	
direct	2893 May 31 17:08	0° $\mathring{Z}$ 18'36		evening set	2899 Nov 28 11:06	21° $\mathring{Z}$ 28'04	
evening set	2893 Sep 14 20:56	8° $\mathring{Z}$ 14'02					
conjunction	2893 Oct 02 09:36	10° $\mathring{Z}$ 24'28	2°04'01	conjunction	2899 Dec 15 05:27	23° $\mathring{Z}$ 27'05	1°22'32
minimum elong	2893 Oct 02 09:33	10° $\mathring{Z}$ 24'27	2°04'01	minimum elong	2899 Dec 15 05:30	23° $\mathring{Z}$ 27'05	1°22'31
max. Earth dist.	2893 Oct 02 11:13	10° $\mathring{Z}$ 24'58	10.44184 AU	max. Earth dist.	2899 Dec 15 02:23	23° $\mathring{Z}$ 26'10	10.94598 AU
morning rise	2893 Oct 19 17:49	12° $\mathring{Z}$ 33'32		morning rise	2899 Dec 31 21:16	25° $\mathring{Z}$ 25'24	
retrograde	2894 Jan 28 10:19	20° $\mathring{Z}$ 05'44			2900 Feb 14 05:33	0° $\mathring{Z}$	
opposition	2894 Apr 05 18:42	16° $\mathring{Z}$ 44'06	2°38'52	retrograde	2900 Apr 10 21:08	2° $\mathring{Z}$ 28'04	
min. Earth dist.	2894 Apr 05 16:59	16° $\mathring{Z}$ 44'26	8.49529 AU		2900 Jun 08 08:56	30° $\mathring{R}$	
direct	2894 Jun 14 10:33	13° $\mathring{Z}$ 17'20		opposition	2900 Jun 19 15:05	29° $\mathring{Z}$ 10'18	1°27'39
evening set	2894 Sep 28 09:10	21° $\mathring{Z}$ 05'43		min. Earth dist.	2900 Jun 19 18:01	29° $\mathring{Z}$ 09'46	8.96622 AU
				direct	2900 Aug 29 15:48	25° $\mathring{Z}$ 49'37	
conjunction	2894 Oct 15 17:30	23° $\mathring{Z}$ 13'30	2°11'42		2900 Nov 12 18:37	0° $\mathring{Z}$	
minimum elong	2894 Oct 15 17:29	23° $\mathring{Z}$ 13'30	2°11'42	evening set	2900 Dec 10 02:31	2° $\mathring{Z}$ 59'29	
max. Earth dist.	2894 Oct 15 18:28	23° $\mathring{Z}$ 13'48	10.54619 AU				
morning rise	2894 Nov 01 21:08	25° $\mathring{Z}$ 19'55		conjunction	2900 Dec 26 19:35	4° $\mathring{Z}$ 57'46	0°59'54
	2894 Dec 14 23:50	0° $\mathring{M}$		minimum elong	2900 Dec 26 19:37	4° $\mathring{Z}$ 57'46	0°59'54
retrograde	2895 Feb 10 03:29	2° $\mathring{M}$ 44'39		max. Earth dist.	2900 Dec 26 15:41	4° $\mathring{Z}$ 56'36	10.98086 AU
	2895 Apr 11 02:36	30° $\mathring{R}$		morning rise	2901 Jan 12 11:04	6° $\mathring{Z}$ 55'36	
opposition	2895 Apr 18 19:50	29° $\mathring{Z}$ 24'10	2°44'01	retrograde	2901 Apr 22 17:25	13° $\mathring{Z}$ 57'41	
min. Earth dist.	2895 Apr 18 19:32	29° $\mathring{Z}$ 24'13	8.59873 AU	opposition	2901 Jul 01 21:09	10° $\mathring{Z}$ 39'42	0°58'22
direct	2895 Jun 27 21:08	25° $\mathring{Z}$ 58'26		min. Earth dist.	2901 Jul 02 00:50	10° $\mathring{Z}$ 39'01	8.99139 AU
	2895 Sep 08 16:47	0° $\mathring{M}$		direct	2901 Sep 10 19:43	7° $\mathring{Z}$ 19'39	
evening set	2895 Oct 11 11:41	3° $\mathring{M}$ 39'31		evening set	2901 Dec 21 14:53	14° $\mathring{Z}$ 26'03	
conjunction	2895 Oct 28 16:00	5° $\mathring{M}$ 44'53	2°12'53	conjunction	2902 Jan 07 07:10	16° $\mathring{Z}$ 23'56	0°35'00
minimum elong	2895 Oct 28 16:00	5° $\mathring{M}$ 44'53	2°12'53	minimum elong	2902 Jan 07 07:11	16° $\mathring{Z}$ 23'56	0°35'00
max. Earth dist.	2895 Oct 28 15:28	5° $\mathring{M}$ 44'44	10.64720 AU	max. Earth dist.	2902 Jan 07 02:47	16° $\mathring{Z}$ 22'38	10.99653 AU
morning rise	2895 Nov 14 15:46	7° $\mathring{M}$ 48'57		morning rise	2902 Jan 23 22:47	18° $\mathring{Z}$ 21'37	
	2896 Feb 11 00:46	15° $\mathring{M}$		retrograde	2902 May 04 16:08	25° $\mathring{Z}$ 24'35	
retrograde	2896 Feb 22 13:45	15° $\mathring{M}$ 07'04		opposition	2902 Jul 14 02:28	22° $\mathring{Z}$ 06'09	0°26'53
	2896 Mar 05 04:20	15° $\mathring{R}$		min. Earth dist.	2902 Jul 14 05:50	22° $\mathring{Z}$ 05'32	8.99699 AU
opposition	2896 Apr 30 16:31	11° $\mathring{M}$ 47'38	2°41'21	direct	2902 Sep 22 22:21	18° $\mathring{Z}$ 46'36	
min. Earth dist.	2896 Apr 30 17:48	11° $\mathring{M}$ 47'23	8.69649 AU	evening set	2903 Jan 02 02:06	25° $\mathring{Z}$ 50'51	
direct	2896 Jul 10 02:48	8° $\mathring{M}$ 23'00					
	2896 Oct 15 03:17	15° $\mathring{M}$		conjunction	2903 Jan 18 18:03	27° $\mathring{Z}$ 48'41	0°08'46
evening set	2896 Oct 23 04:57	15° $\mathring{M}$ 56'49		minimum elong	2903 Jan 18 18:04	27° $\mathring{Z}$ 48'42	0°08'46
conjunction	2896 Nov 09 05:43	18° $\mathring{M}$ 00'03	2°07'55	behind sun begin	2903 Jan 18 12:00	27° $\mathring{Z}$ 46'55	
minimum elong	2896 Nov 09 05:44	18° $\mathring{M}$ 00'04	2°07'56	behind sun end	2903 Jan 19 00:07	27° $\mathring{Z}$ 50'28	
max. Earth dist.	2896 Nov 09 03:28	17° $\mathring{M}$ 59'22	10.74076 AU	max. Earth dist.	2903 Jan 18 14:25	27° $\mathring{Z}$ 47'38	10.99229 AU
morning rise	2896 Nov 26 02:28	20° $\mathring{M}$ 02'07		morning rise	2903 Feb 04 09:57	29° $\mathring{Z}$ 46'33	
retrograde	2897 Mar 05 19:56	27° $\mathring{M}$ 14'38			2903 Feb 06 08:27	0° $\mathring{Z}$	
opposition	2897 May 13 09:04	23° $\mathring{M}$ 56'00	2°31'29	retrograde	2903 May 16 16:50	6° $\mathring{Z}$ 51'51	
min. Earth dist.	2897 May 13 11:18	23° $\mathring{M}$ 55'35	8.78503 AU	desc. node	2903 May 21 20:19	6° $\mathring{Z}$ 50'33	
direct	2897 Jul 23 02:40	20° $\mathring{M}$ 32'30		opposition	2903 Jul 26 07:57	3° $\mathring{Z}$ 32'48	0°-5'-40
evening set	2897 Nov 04 13:49	27° $\mathring{M}$ 59'16		min. Earth dist.	2903 Jul 26 10:33	3° $\mathring{Z}$ 32'19	8.98273 AU
				direct	2903 Oct 04 21:06	0° $\mathring{Z}$ 13'36	
conjunction	2897 Nov 21 11:48	0° $\mathring{Z}$ 00'45	1°57'23	evening set	2904 Jan 13 13:41	7° $\mathring{Z}$ 17'05	



conjunction	2904 Jan 30 05:35	9° $\approx$ 15'12	0°-17'-58	evening set	2910 Mar 25 04:05	19° $\Upsilon$ 08'50	
minimum elong	2904 Jan 30 05:35	9° $\approx$ 15'12	0°17'58				
max. Earth dist.	2904 Jan 30 02:37	9° $\approx$ 14'19	10.96829 AU	conjunction	2910 Apr 11 04:58	21° $\Upsilon$ 15'17	-2°-10'-54
morning rise	2904 Feb 15 22:07	11° $\approx$ 13'33		minimum elong	2910 Apr 11 04:57	21° $\Upsilon$ 15'17	2°10'55
	2904 Mar 22 05:42	15° $\approx$		max. Earth dist.	2910 Apr 11 04:51	21° $\Upsilon$ 15'15	10.50644 AU
retrograde	2904 May 27 20:58	18° $\approx$ 22'39		morning rise	2910 Apr 28 10:26	23° $\Upsilon$ 23'09	
opposition	2904 Aug 06 14:55	15° $\approx$ 02'47	0°-38'-11		2910 Jul 04 15:06	0° $\delta$	
min. Earth dist.	2904 Aug 06 17:07	15° $\approx$ 02'22	8.94915 AU	retrograde	2910 Aug 12 13:51	1° $\delta$ 15'23	
	2904 Aug 07 05:52	15° $\approx$			2910 Sep 20 23:51	30° $\approx$ $\Upsilon$	
direct	2904 Oct 15 19:58	11° $\approx$ 43'46		opposition	2910 Oct 21 06:16	27° $\Upsilon$ 48'52	-2°-44'-1
	2904 Dec 19 15:31	15° $\approx$		min. Earth dist.	2910 Oct 21 05:38	27° $\Upsilon$ 48'59	8.45790 AU
evening set	2905 Jan 24 03:07	18° $\approx$ 47'54		direct	2910 Dec 27 17:51	24° $\Upsilon$ 27'01	
					2911 Mar 21 11:42	0° $\delta$	
conjunction	2905 Feb 09 19:11	20° $\approx$ 46'36	0°-44'-4	evening set	2911 Apr 07 07:58	2° $\delta$ 00'42	
minimum elong	2905 Feb 09 19:10	20° $\approx$ 46'36	0°44'05				
max. Earth dist.	2905 Feb 09 15:49	20° $\approx$ 45'36	10.92538 AU	conjunction	2911 Apr 24 12:38	4° $\delta$ 09'33	-2°-12'-44
morning rise	2905 Feb 26 12:54	22° $\approx$ 45'48		minimum elong	2911 Apr 24 12:38	4° $\delta$ 09'33	2°12'44
	2905 Jun 08 21:50	0° $\approx$		max. Earth dist.	2911 Apr 24 13:27	4° $\delta$ 09'49	10.40757 AU
retrograde	2905 Jun 09 05:30	0° $\approx$ 00'00		morning rise	2911 May 11 22:01	6° $\delta$ 19'52	
	2905 Jun 09 13:10	30° $\approx$		retrograde	2911 Aug 26 10:37	14° $\delta$ 19'36	
opposition	2905 Aug 19 00:03	26° $\approx$ 39'11	-1°-9'-29	opposition	2911 Nov 03 16:54	10° $\delta$ 52'08	-2°-42'-22
min. Earth dist.	2905 Aug 19 02:35	26° $\approx$ 38'43	8.89744 AU	min. Earth dist.	2911 Nov 03 15:48	10° $\delta$ 52'22	8.36133 AU
direct	2905 Oct 27 18:59	23° $\approx$ 20'09		direct	2912 Jan 09 19:45	7° $\delta$ 29'17	
	2906 Feb 01 01:49	0° $\approx$			2912 Apr 18 11:49	15° $\delta$	
evening set	2906 Feb 04 20:05	0° $\approx$ 26'22		evening set	2912 Apr 19 20:58	15° $\delta$ 10'16	
conjunction	2906 Feb 21 12:47	2° $\approx$ 25'58	-1°-8'-38	conjunction	2912 May 07 06:07	17° $\delta$ 21'39	-2°-7'-42
minimum elong	2906 Feb 21 12:44	2° $\approx$ 25'57	1°08'39	minimum elong	2912 May 07 06:08	17° $\delta$ 21'39	2°07'42
max. Earth dist.	2906 Feb 21 09:25	2° $\approx$ 24'58	10.86508 AU	max. Earth dist.	2912 May 07 08:25	17° $\delta$ 22'23	10.31443 AU
morning rise	2906 Mar 10 07:58	4° $\approx$ 26'19		morning rise	2912 May 24 19:44	19° $\delta$ 34'28	
retrograde	2906 Jun 21 16:53	11° $\approx$ 46'49		retrograde	2912 Sep 08 12:33	27° $\delta$ 40'31	
opposition	2906 Aug 31 11:56	8° $\approx$ 24'56	-1°-38'-19	opposition	2912 Nov 16 07:51	24° $\delta$ 12'16	-2°-32'-1
min. Earth dist.	2906 Aug 31 14:13	8° $\approx$ 24'30	8.82944 AU	min. Earth dist.	2912 Nov 16 05:50	24° $\delta$ 12'41	8.27269 AU
direct	2906 Nov 08 20:18	5° $\approx$ 05'39		direct	2913 Jan 22 04:26	20° $\delta$ 48'19	
evening set	2907 Feb 16 17:48	12° $\approx$ 15'20		evening set	2913 May 03 18:49	28° $\delta$ 36'27	
					2913 May 14 19:05	0° $\Pi$	
conjunction	2907 Mar 05 11:42	14° $\approx$ 16'11	-1°-30'-37	conjunction	2913 May 21 08:47	0° $\Pi$ 50'22	-1°-55'-39
minimum elong	2907 Mar 05 11:40	14° $\approx$ 16'10	1°30'38	minimum elong	2913 May 21 08:49	0° $\Pi$ 50'23	1°55'40
max. Earth dist.	2907 Mar 05 09:32	14° $\approx$ 15'31	10.78962 AU	max. Earth dist.	2913 May 21 11:59	0° $\Pi$ 51'23	10.23148 AU
morning rise	2907 Mar 22 08:37	16° $\approx$ 17'57		morning rise	2913 Jun 08 02:43	3° $\Pi$ 05'36	
retrograde	2907 Jul 04 12:25	23° $\approx$ 45'48		retrograde	2913 Sep 22 18:41	11° $\Pi$ 16'23	
opposition	2907 Sep 13 03:41	20° $\approx$ 22'43	-2°-3'-26	opposition	2913 Nov 30 02:44	7° $\Pi$ 47'36	-2°-13'-1
min. Earth dist.	2907 Sep 13 04:50	20° $\approx$ 22'30	8.74777 AU	min. Earth dist.	2913 Nov 30 00:05	7° $\Pi$ 48'08	8.19604 AU
direct	2907 Nov 21 01:53	17° $\approx$ 03'04		direct	2914 Feb 04 18:54	4° $\Pi$ 22'30	
evening set	2908 Feb 28 21:32	24° $\approx$ 17'22		evening set	2914 May 18 00:51	12° $\Pi$ 17'20	
conjunction	2908 Mar 16 17:10	26° $\approx$ 19'47	-1°-48'-59	conjunction	2914 Jun 04 19:28	14° $\Pi$ 33'37	-1°-36'-56
minimum elong	2908 Mar 16 17:08	26° $\approx$ 19'46	1°49'01	minimum elong	2914 Jun 04 19:31	14° $\Pi$ 33'38	1°36'56
max. Earth dist.	2908 Mar 16 16:25	26° $\approx$ 19'33	10.70203 AU	max. Earth dist.	2914 Jun 04 22:51	14° $\Pi$ 34'42	10.16253 AU
morning rise	2908 Apr 02 16:17	28° $\approx$ 23'19		morning rise	2914 Jun 22 17:25	16° $\Pi$ 50'59	
	2908 Apr 16 11:22	0° $\Upsilon$		retrograde	2914 Oct 07 04:48	25° $\Pi$ 04'45	
retrograde	2908 Jul 16 14:59	5° $\Upsilon$ 59'10		opposition	2914 Dec 14 00:45	21° $\Pi$ 35'44	-1°-46'-4
opposition	2908 Sep 24 23:47	2° $\Upsilon$ 34'52	-2°-23'-34	min. Earth dist.	2914 Dec 13 21:56	21° $\Pi$ 36'19	8.13523 AU
min. Earth dist.	2908 Sep 24 23:43	2° $\Upsilon$ 34'53	8.65583 AU	direct	2915 Feb 18 13:58	18° $\Pi$ 09'32	
	2908 Nov 02 11:25	30° $\approx$ $\Upsilon$		evening set	2915 Jun 01 14:09	26° $\Pi$ 10'23	
direct	2908 Dec 02 09:23	29° $\approx$ 14'40					
	2908 Dec 31 19:25	0° $\Upsilon$		conjunction	2915 Jun 19 12:54	28° $\Pi$ 28'37	-1°-12'-21
evening set	2909 Mar 12 08:44	6° $\Upsilon$ 34'40		minimum elong	2915 Jun 19 12:57	28° $\Pi$ 28'38	1°12'22
				max. Earth dist.	2915 Jun 19 16:02	28° $\Pi$ 29'38	10.11169 AU
conjunction	2909 Mar 29 06:38	8° $\Upsilon$ 38'57	-2°-2'-44		2915 Jul 01 08:30	0° $\delta$	
minimum elong	2909 Mar 29 06:36	8° $\Upsilon$ 38'57	2°02'45	morning rise	2915 Jul 07 14:13	0° $\delta$ 47'41	
max. Earth dist.	2909 Mar 29 06:16	8° $\Upsilon$ 38'50	10.60618 AU	retrograde	2915 Oct 21 15:54	9° $\delta$ 02'23	
morning rise	2909 Apr 15 08:37	10° $\Upsilon$ 44'32		opposition	2915 Dec 28 01:03	5° $\delta$ 33'28	-1°-12'-32
retrograde	2909 Jul 29 23:11	18° $\Upsilon$ 28'39		min. Earth dist.	2915 Dec 27 22:27	5° $\delta$ 34'00	8.09477 AU
opposition	2909 Oct 08 00:30	15° $\Upsilon$ 03'12	-2°-37'-28	direct	2916 Mar 03 15:08	2° $\delta$ 06'15	
min. Earth dist.	2909 Oct 08 00:04	15° $\Upsilon$ 03'17	8.55768 AU	evening set	2916 Jun 15 09:09	10° $\delta$ 11'58	
direct	2909 Dec 14 22:18	11° $\Upsilon$ 42'14					



conjunction	2916 Jul 03 11:03	12° $\mathfrak{S}$ 31'31	0°-43'-19	opposition	2922 Mar 19 05:20	28° $\mathfrak{M}$ 27'03	2°17'37
minimum elong	2916 Jul 03 11:05	12° $\mathfrak{S}$ 31'32	0°43'19	min. Earth dist.	2922 Mar 19 03:35	28° $\mathfrak{M}$ 27'24	8.34496 AU
max. Earth dist.	2916 Jul 03 13:48	12° $\mathfrak{S}$ 32'25	10.08316 AU	direct	2922 May 27 04:14	24° $\mathfrak{M}$ 58'37	
morning rise	2916 Jul 21 14:31	14° $\mathfrak{S}$ 51'34			2922 Aug 16 05:33	0° $\mathfrak{L}$	
retrograde	2916 Nov 04 01:36	23° $\mathfrak{S}$ 05'03		evening set	2922 Sep 10 09:10	2° $\mathfrak{L}$ 56'31	
opposition	2917 Jan 10 02:25	19° $\mathfrak{S}$ 36'30	0°-34'-26				
min. Earth dist.	2917 Jan 10 00:07	19° $\mathfrak{S}$ 36'59	8.07822 AU	conjunction	2922 Sep 27 23:51	5° $\mathfrak{L}$ 08'07	1°58'50
direct	2917 Mar 17 21:16	16° $\mathfrak{S}$ 08'25		minimum elong	2922 Sep 27 23:48	5° $\mathfrak{L}$ 08'06	1°58'49
evening set	2917 Jun 30 07:43	24° $\mathfrak{S}$ 17'26		max. Earth dist.	2922 Sep 28 01:31	5° $\mathfrak{L}$ 08'38	10.39300 AU
				morning rise	2922 Oct 15 10:10	7° $\mathfrak{L}$ 18'23	
conjunction	2917 Jul 18 11:18	26° $\mathfrak{S}$ 37'30	0°-11'-37	retrograde	2923 Jan 24 07:59	14° $\mathfrak{L}$ 53'46	
minimum elong	2917 Jul 18 11:18	26° $\mathfrak{S}$ 37'31	0°11'37	opposition	2923 Apr 01 13:10	11° $\mathfrak{L}$ 31'12	2°34'19
behind sun begin	2917 Jul 18 06:10	26° $\mathfrak{S}$ 35'52		min. Earth dist.	2923 Apr 01 12:25	11° $\mathfrak{L}$ 31'21	8.44466 AU
behind sun end	2917 Jul 18 16:27	26° $\mathfrak{S}$ 39'09		direct	2923 Jun 10 00:03	8° $\mathfrak{L}$ 03'30	
max. Earth dist.	2917 Jul 18 14:01	26° $\mathfrak{S}$ 38'22	10.07948 AU	evening set	2923 Sep 24 01:15	15° $\mathfrak{L}$ 54'48	
morning rise	2917 Aug 05 15:14	28° $\mathfrak{S}$ 57'40					
	2917 Aug 13 22:19	0° $\mathfrak{L}$		conjunction	2923 Oct 11 11:22	18° $\mathfrak{L}$ 03'44	2°09'18
retrograde	2917 Nov 18 07:37	7° $\mathfrak{L}$ 07'51		minimum elong	2923 Oct 11 11:20	18° $\mathfrak{L}$ 03'43	2°09'17
asc. node	2917 Dec 01 04:07	6° $\mathfrak{L}$ 58'40		max. Earth dist.	2923 Oct 11 11:37	18° $\mathfrak{L}$ 03'48	10.49503 AU
opposition	2918 Jan 24 03:27	3° $\mathfrak{L}$ 39'57	0°05'45	morning rise	2923 Oct 28 17:04	20° $\mathfrak{L}$ 11'17	
min. Earth dist.	2918 Jan 24 01:02	3° $\mathfrak{L}$ 40'27	8.08723 AU	retrograde	2924 Feb 06 01:46	27° $\mathfrak{L}$ 38'57	
direct	2918 Apr 01 06:19	0° $\mathfrak{L}$ 11'14		opposition	2924 Apr 13 15:54	24° $\mathfrak{L}$ 17'31	2°42'54
evening set	2918 Jul 15 07:04	8° $\mathfrak{L}$ 21'41		min. Earth dist.	2924 Apr 13 15:38	24° $\mathfrak{L}$ 17'34	8.54821 AU
				direct	2924 Jun 22 14:22	20° $\mathfrak{L}$ 50'48	
conjunction	2918 Aug 02 10:44	10° $\mathfrak{L}$ 41'24	0°20'47	evening set	2924 Oct 06 07:24	28° $\mathfrak{L}$ 34'51	
minimum elong	2918 Aug 02 10:43	10° $\mathfrak{L}$ 41'24	0°20'47		2924 Oct 17 23:13	0° $\mathfrak{M}$	
max. Earth dist.	2918 Aug 02 13:40	10° $\mathfrak{L}$ 42'21	10.10128 AU				
morning rise	2918 Aug 20 13:27	13° $\mathfrak{L}$ 00'48		conjunction	2924 Oct 23 13:20	0° $\mathfrak{M}$ 41'14	2°13'13
	2918 Sep 05 16:52	15° $\mathfrak{L}$		minimum elong	2924 Oct 23 13:19	0° $\mathfrak{M}$ 41'14	2°13'13
retrograde	2918 Dec 02 09:47	21° $\mathfrak{L}$ 05'55		max. Earth dist.	2924 Oct 23 12:48	0° $\mathfrak{M}$ 41'04	10.59846 AU
opposition	2919 Feb 07 02:53	17° $\mathfrak{L}$ 38'51	0°45'23	morning rise	2924 Nov 09 14:53	2° $\mathfrak{M}$ 46'17	
min. Earth dist.	2919 Feb 07 00:07	17° $\mathfrak{L}$ 39'25	8.12142 AU	retrograde	2925 Feb 17 13:37	10° $\mathfrak{M}$ 06'52	
	2919 Mar 15 22:09	15° $\mathfrak{R}$ $\mathfrak{L}$		opposition	2925 Apr 26 13:55	6° $\mathfrak{M}$ 46'30	2°43'30
direct	2919 Apr 15 14:43	14° $\mathfrak{L}$ 09'46		min. Earth dist.	2925 Apr 26 13:35	6° $\mathfrak{M}$ 46'34	8.65050 AU
	2919 May 16 04:11	15° $\mathfrak{L}$		direct	2925 Jul 05 22:42	3° $\mathfrak{M}$ 20'55	
evening set	2919 Jul 30 04:28	22° $\mathfrak{L}$ 19'43		evening set	2925 Oct 19 03:44	10° $\mathfrak{M}$ 57'27	
conjunction	2919 Aug 17 06:38	24° $\mathfrak{L}$ 38'15	0°51'40	conjunction	2925 Nov 05 06:05	13° $\mathfrak{M}$ 01'32	2°10'50
minimum elong	2919 Aug 17 06:35	24° $\mathfrak{L}$ 38'14	0°51'40	minimum elong	2925 Nov 05 06:06	13° $\mathfrak{M}$ 01'32	2°10'50
max. Earth dist.	2919 Aug 17 09:49	24° $\mathfrak{L}$ 39'16	10.14716 AU	max. Earth dist.	2925 Nov 05 05:42	13° $\mathfrak{M}$ 01'25	10.69837 AU
morning rise	2919 Sep 04 06:33	26° $\mathfrak{L}$ 56'04			2925 Nov 21 13:27	15° $\mathfrak{M}$	
	2919 Sep 29 21:00	0° $\mathfrak{M}$		morning rise	2925 Nov 22 04:07	15° $\mathfrak{M}$ 04'22	
retrograde	2919 Dec 16 07:44	4° $\mathfrak{M}$ 54'45		retrograde	2926 Mar 01 22:23	22° $\mathfrak{M}$ 18'46	
opposition	2920 Feb 20 23:37	1° $\mathfrak{M}$ 28'40	1°21'54	opposition	2926 May 09 07:27	18° $\mathfrak{M}$ 59'20	2°36'38
min. Earth dist.	2920 Feb 20 20:33	1° $\mathfrak{M}$ 29'17	8.17841 AU	min. Earth dist.	2926 May 09 07:32	18° $\mathfrak{M}$ 59'19	8.74683 AU
	2920 Mar 10 17:02	30° $\mathfrak{R}$ $\mathfrak{L}$		direct	2926 Jul 18 23:33	15° $\mathfrak{M}$ 34'59	
direct	2920 Apr 28 22:07	27° $\mathfrak{L}$ 59'31		evening set	2926 Oct 31 15:25	23° $\mathfrak{M}$ 04'09	
	2920 Jun 16 09:56	0° $\mathfrak{M}$					
evening set	2920 Aug 12 21:31	6° $\mathfrak{M}$ 07'05		conjunction	2926 Nov 17 14:44	25° $\mathfrak{M}$ 06'17	2°02'37
				minimum elong	2926 Nov 17 14:45	25° $\mathfrak{M}$ 06'18	2°02'38
conjunction	2920 Aug 30 20:43	8° $\mathfrak{M}$ 23'43	1°19'14	max. Earth dist.	2926 Nov 17 13:59	25° $\mathfrak{M}$ 06'04	10.79026 AU
minimum elong	2920 Aug 30 20:40	8° $\mathfrak{M}$ 23'42	1°19'13	morning rise	2926 Dec 04 10:02	27° $\mathfrak{M}$ 07'17	
max. Earth dist.	2920 Aug 31 00:02	8° $\mathfrak{M}$ 24'46	10.21398 AU		2926 Dec 30 02:47	0° $\mathfrak{J}$	
morning rise	2920 Sep 17 16:34	10° $\mathfrak{M}$ 39'20		retrograde	2927 Mar 14 01:23	4° $\mathfrak{J}$ 16'28	
retrograde	2920 Dec 28 23:08	18° $\mathfrak{M}$ 30'36		opposition	2927 May 21 20:54	0° $\mathfrak{J}$ 57'51	2°23'03
opposition	2921 Mar 05 16:36	15° $\mathfrak{M}$ 05'38	1°53'10	min. Earth dist.	2927 May 21 22:07	0° $\mathfrak{J}$ 57'37	8.83303 AU
min. Earth dist.	2921 Mar 05 13:57	15° $\mathfrak{M}$ 06'10	8.25446 AU		2927 Jun 03 19:02	30° $\mathfrak{R}$ $\mathfrak{M}$	
direct	2921 May 13 02:56	11° $\mathfrak{M}$ 36'44		direct	2927 Jul 31 17:27	27° $\mathfrak{M}$ 34'43	
evening set	2921 Aug 27 07:42	19° $\mathfrak{M}$ 40'11			2927 Sep 25 15:48	0° $\mathfrak{J}$	
				evening set	2927 Nov 12 19:27	4° $\mathfrak{J}$ 57'03	
conjunction	2921 Sep 14 02:54	21° $\mathfrak{M}$ 54'25	1°41'58	conjunction	2927 Nov 29 16:13	6° $\mathfrak{J}$ 57'34	1°49'15
minimum elong	2921 Sep 14 02:51	21° $\mathfrak{M}$ 54'24	1°41'57	minimum elong	2927 Nov 29 16:15	6° $\mathfrak{J}$ 57'34	1°49'15
max. Earth dist.	2921 Sep 14 05:41	21° $\mathfrak{M}$ 55'18	10.29756 AU	max. Earth dist.	2927 Nov 29 14:11	6° $\mathfrak{J}$ 56'57	10.87026 AU
morning rise	2921 Oct 01 18:02	24° $\mathfrak{M}$ 07'27		morning rise	2927 Dec 16 09:41	8° $\mathfrak{J}$ 57'08	
	2921 Nov 26 13:02	0° $\mathfrak{L}$		retrograde	2928 Mar 25 00:48	16° $\mathfrak{J}$ 02'21	
retrograde	2922 Jan 11 07:01	1° $\mathfrak{L}$ 50'48		opposition	2928 Jun 02 07:14	12° $\mathfrak{J}$ 44'20	2°03'40
	2922 Feb 27 03:03	30° $\mathfrak{R}$ $\mathfrak{M}$					



min. Earth dist.	2928 Jun 02 09:26	12° $\mathring{A}$ 43'55	8.90564 AU	opposition	2934 Aug 13 20:13	21° $\approx$ 42'31	0°-55'-40
direct	2928 Aug 12 07:46	9° $\mathring{A}$ 22'22		min. Earth dist.	2934 Aug 13 22:56	21° $\approx$ 42'01	8.94618 AU
evening set	2928 Nov 23 16:54	16° $\mathring{A}$ 38'35		direct	2934 Oct 22 20:35	18° $\approx$ 24'09	
				evening set	2935 Jan 30 23:43	25° $\approx$ 28'33	
conjunction	2928 Dec 10 11:43	18° $\mathring{A}$ 37'50	1°31'29				
minimum elong	2928 Dec 10 11:45	18° $\mathring{A}$ 37'51	1°31'29	conjunction	2935 Feb 16 16:04	27° $\approx$ 27'28	0°-57'-52
max. Earth dist.	2928 Dec 10 08:46	18° $\mathring{A}$ 36'57	10.93523 AU	minimum elong	2935 Feb 16 16:02	27° $\approx$ 27'27	0°57'53
morning rise	2928 Dec 27 04:01	20° $\mathring{A}$ 36'20		max. Earth dist.	2935 Feb 16 12:45	27° $\approx$ 26'29	10.91616 AU
retrograde	2929 Apr 05 23:14	27° $\mathring{A}$ 38'57		morning rise	2935 Mar 05 10:14	29° $\approx$ 27'00	
opposition	2929 Jun 14 14:59	24° $\mathring{A}$ 21'17	1°39'29		2935 Mar 10 03:46	0° $\mathring{H}$	
min. Earth dist.	2929 Jun 14 17:07	24° $\mathring{A}$ 20'53	8.96185 AU	retrograde	2935 Jun 16 12:08	6° $\mathring{H}$ 43'50	
direct	2929 Aug 24 17:01	21° $\mathring{A}$ 00'24		opposition	2935 Aug 26 06:26	3° $\mathring{H}$ 23'03	-1°-25'-41
evening set	2929 Dec 05 09:24	28° $\mathring{A}$ 11'27		min. Earth dist.	2935 Aug 26 08:55	3° $\mathring{H}$ 22'35	8.88196 AU
	2929 Dec 20 17:55	0° $\mathring{B}$		direct	2935 Nov 03 19:42	0° $\mathring{H}$ 04'30	
				evening set	2936 Feb 11 18:57	7° $\mathring{H}$ 11'53	
conjunction	2929 Dec 22 02:57	0° $\mathring{B}$ 09'49	1°10'10				
minimum elong	2929 Dec 22 02:59	0° $\mathring{B}$ 09'49	1°10'10	conjunction	2936 Feb 28 12:06	9° $\mathring{H}$ 11'56	-1°-21'-6
max. Earth dist.	2929 Dec 22 00:16	0° $\mathring{B}$ 09'01	10.98269 AU	minimum elong	2936 Feb 28 12:04	9° $\mathring{H}$ 11'55	1°21'07
morning rise	2930 Jan 07 18:32	2° $\mathring{B}$ 07'38		max. Earth dist.	2936 Feb 28 08:19	9° $\mathring{H}$ 10'47	10.84309 AU
retrograde	2930 Apr 17 20:37	9° $\mathring{B}$ 09'01		morning rise	2936 Mar 16 07:58	11° $\mathring{H}$ 12'49	
opposition	2930 Jun 26 20:46	5° $\mathring{B}$ 51'26	1°11'33	retrograde	2936 Jun 28 04:53	18° $\mathring{H}$ 36'42	
min. Earth dist.	2930 Jun 26 22:39	5° $\mathring{B}$ 51'05	8.99956 AU	opposition	2936 Sep 06 20:16	15° $\mathring{H}$ 14'41	-1°-52'-35
direct	2930 Sep 05 21:49	2° $\mathring{B}$ 31'29		min. Earth dist.	2936 Sep 06 22:55	15° $\mathring{H}$ 14'11	8.80130 AU
evening set	2930 Dec 16 22:31	9° $\mathring{B}$ 38'31		direct	2936 Nov 14 22:31	11° $\mathring{H}$ 55'40	
				evening set	2937 Feb 22 19:39	19° $\mathring{H}$ 07'18	
conjunction	2931 Jan 02 15:12	11° $\mathring{B}$ 36'20	0°46'11				
minimum elong	2931 Jan 02 15:13	11° $\mathring{B}$ 36'21	0°46'11	conjunction	2937 Mar 11 14:12	21° $\mathring{H}$ 08'50	-1°-41'-11
max. Earth dist.	2931 Jan 02 12:47	11° $\mathring{B}$ 35'37	11.01080 AU	minimum elong	2937 Mar 11 14:09	21° $\mathring{H}$ 08'49	1°41'13
morning rise	2931 Jan 19 06:30	13° $\mathring{B}$ 33'49		max. Earth dist.	2937 Mar 11 10:17	21° $\mathring{H}$ 07'38	10.75537 AU
retrograde	2931 Apr 29 19:36	20° $\mathring{B}$ 35'24		morning rise	2937 Mar 28 12:17	23° $\mathring{H}$ 11'24	
opposition	2931 Jul 09 01:49	17° $\mathring{B}$ 17'41	0°40'58		2937 Jun 11 11:00	0° $\mathring{Y}$	
min. Earth dist.	2931 Jul 09 04:06	17° $\mathring{B}$ 17'16	9.01735 AU	retrograde	2937 Jul 11 02:31	0° $\mathring{Y}$ 43'09	
direct	2931 Sep 17 23:13	13° $\mathring{B}$ 58'28			2937 Aug 10 01:41	30° $\mathring{R}$ $\mathring{H}$	
evening set	2931 Dec 28 09:47	21° $\mathring{B}$ 02'44		opposition	2937 Sep 19 14:12	27° $\mathring{H}$ 19'47	-2°-15'-7
				min. Earth dist.	2937 Sep 19 16:51	27° $\mathring{H}$ 19'16	8.70795 AU
conjunction	2932 Jan 14 01:45	23° $\mathring{B}$ 00'20	0°20'28	direct	2937 Nov 27 04:46	24° $\mathring{H}$ 00'03	
minimum elong	2932 Jan 14 01:45	23° $\mathring{B}$ 00'20	0°20'28		2938 Feb 24 05:32	0° $\mathring{Y}$	
max. Earth dist.	2932 Jan 13 22:27	22° $\mathring{B}$ 59'21	11.01849 AU	evening set	2938 Mar 07 03:08	1° $\mathring{Y}$ 17'07	
morning rise	2932 Jan 30 17:19	24° $\mathring{B}$ 57'50					
	2932 Mar 21 04:12	0° $\approx$		conjunction	2938 Mar 23 23:49	3° $\mathring{Y}$ 20'25	-1°-57'-8
retrograde	2932 May 10 18:01	2° $\approx$ 01'04		minimum elong	2938 Mar 23 23:46	3° $\mathring{Y}$ 20'25	1°57'09
	2932 Jul 02 09:51	30° $\mathring{R}$ $\mathring{B}$		max. Earth dist.	2938 Mar 23 21:04	3° $\mathring{Y}$ 19'35	10.65693 AU
opposition	2932 Jul 20 06:56	28° $\mathring{B}$ 42'57	0°08'48	morning rise	2938 Apr 10 00:26	5° $\mathring{Y}$ 24'57	
min. Earth dist.	2932 Jul 20 10:00	28° $\mathring{B}$ 42'23	9.01454 AU	retrograde	2938 Jul 24 06:15	13° $\mathring{Y}$ 05'04	
direct	2932 Sep 28 21:37	25° $\mathring{B}$ 24'15		opposition	2938 Oct 02 12:29	9° $\mathring{Y}$ 40'16	-2°-31'-59
desc. node	2932 Oct 30 03:15	26° $\mathring{B}$ 11'38		min. Earth dist.	2938 Oct 02 14:12	9° $\mathring{Y}$ 39'56	8.60609 AU
	2932 Dec 16 17:49	0° $\approx$		direct	2938 Dec 09 16:48	6° $\mathring{Y}$ 19'40	
evening set	2933 Jan 07 20:46	2° $\approx$ 27'07		evening set	2939 Mar 19 18:19	13° $\mathring{Y}$ 43'05	
conjunction	2933 Jan 24 12:24	4° $\approx$ 24'48	0°-6'-10	conjunction	2939 Apr 05 17:49	15° $\mathring{Y}$ 48'31	-2°-7'-56
minimum elong	2933 Jan 24 12:24	4° $\approx$ 24'48	0°06'10	minimum elong	2939 Apr 05 17:48	15° $\mathring{Y}$ 48'30	2°07'57
behind sun begin	2933 Jan 24 05:47	4° $\approx$ 22'51		max. Earth dist.	2939 Apr 05 16:39	15° $\mathring{Y}$ 48'09	10.55227 AU
behind sun end	2933 Jan 24 19:02	4° $\approx$ 26'44		morning rise	2939 Apr 22 21:29	17° $\mathring{Y}$ 55'16	
max. Earth dist.	2933 Jan 24 08:26	4° $\approx$ 23'39	11.00530 AU	retrograde	2939 Aug 06 18:34	25° $\mathring{Y}$ 43'50	
morning rise	2933 Feb 10 04:38	6° $\approx$ 22'39		opposition	2939 Oct 15 15:48	22° $\mathring{Y}$ 17'39	-2°-42'-1
retrograde	2933 May 22 19:20	13° $\approx$ 29'01		min. Earth dist.	2939 Oct 15 16:09	22° $\mathring{Y}$ 17'35	8.50039 AU
opposition	2933 Aug 01 12:44	10° $\approx$ 10'12	0°-23'-47	direct	2939 Dec 22 09:28	18° $\mathring{Y}$ 56'03	
min. Earth dist.	2933 Aug 01 16:00	10° $\approx$ 09'36	8.99082 AU	evening set	2940 Mar 31 17:58	26° $\mathring{Y}$ 26'28	
direct	2933 Oct 10 21:46	6° $\approx$ 51'46					
evening set	2934 Jan 19 08:49	13° $\approx$ 54'40		conjunction	2940 Apr 17 20:57	28° $\mathring{Y}$ 34'16	-2°-12'-44
	2934 Jan 28 15:06	15° $\approx$		minimum elong	2940 Apr 17 20:56	28° $\mathring{Y}$ 34'16	2°12'44
				max. Earth dist.	2940 Apr 17 20:51	28° $\mathring{Y}$ 34'14	10.44634 AU
conjunction	2934 Feb 05 00:40	15° $\approx$ 52'48	0°-32'-33		2940 Apr 29 07:28	0° $\mathring{B}$	
minimum elong	2934 Feb 05 00:39	15° $\approx$ 52'48	0°32'33	morning rise	2940 May 05 04:19	0° $\mathring{B}$ 43'29	
max. Earth dist.	2934 Feb 04 21:05	15° $\approx$ 51'44	10.97103 AU	retrograde	2940 Aug 19 13:41	8° $\mathring{B}$ 40'05	
morning rise	2934 Feb 21 17:43	17° $\approx$ 51'19		opposition	2940 Oct 28 00:06	5° $\mathring{B}$ 12'41	-2°-44'-13
retrograde	2934 Jun 04 01:43	25° $\approx$ 02'14		min. Earth dist.	2940 Oct 27 23:29	5° $\mathring{B}$ 12'48	8.39582 AU



direct	2941 Jan 03 06:48	1°8'49.55		opposition	2947 Jan 18 06:14	27°53'38.00	0°-12'-25
evening set	2941 Apr 14 02:47	9°8'27.48		min. Earth dist.	2947 Jan 18 02:17	27°53'38.49	8.06617 AU
				direct	2947 Mar 26 04:45	24°59'09.07	
conjunction	2941 May 01 09:50	11°8'38.08	-2°-10'-52	asc. node	2947 May 14 17:35	26°58'18.24	
minimum elong	2941 May 01 09:51	11°8'38.09	2°10'52		2947 Jun 20 00:03	0°0	
max. Earth dist.	2941 May 01 10:01	11°8'38.12	10.34426 AU	evening set	2947 Jul 08 23:15	2°0'19.34	
morning rise	2941 May 18 21:28	13°8'49.56					
	2941 May 28 11:05	15°8		conjunction	2947 Jul 27 03:16	4°0'39.45	0°06'20
retrograde	2941 Sep 02 13:18	21°8'53.39		minimum elong	2947 Jul 27 03:15	4°0'39.44	0°06'19
opposition	2941 Nov 10 13:04	18°8'25.15	-2°-37'-52	behind sun begin	2947 Jul 26 20:19	4°0'37.31	
min. Earth dist.	2941 Nov 10 12:11	18°8'25.25	8.29758 AU	behind sun end	2947 Jul 27 10:11	4°0'41.58	
direct	2942 Jan 16 12:03	15°8'01.15		max. Earth dist.	2947 Jul 27 08:05	4°0'41.16	10.07616 AU
evening set	2942 Apr 27 20:37	22°8'46.41		morning rise	2947 Aug 14 06:42	6°0'59.44	
					2947 Nov 14 16:47	15°0	
conjunction	2942 May 15 08:15	24°8'59.37	-2°-2'00	retrograde	2947 Nov 26 13:32	15°0'07.53	
minimum elong	2942 May 15 08:17	24°8'59.38	2°02'00		2947 Dec 08 09:50	15°0'0	
max. Earth dist.	2942 May 15 09:00	24°8'59.52	10.25131 AU	opposition	2948 Feb 01 06:51	11°0'40.02	0°27'50
morning rise	2942 Jun 02 00:22	27°8'13.59		min. Earth dist.	2948 Feb 01 03:13	11°0'40.47	8.09245 AU
	2942 Jun 25 02:57	0°0		direct	2948 Apr 08 12:39	8°0'10.48	
retrograde	2942 Sep 16 17:28	5°0'23.27			2948 Jul 11 23:08	15°0	
opposition	2942 Nov 24 06:33	1°0'54.17	-2°-22'-45	evening set	2948 Jul 22 22:26	16°0'21.40	
min. Earth dist.	2942 Nov 24 05:22	1°0'54.32	8.21093 AU				
	2942 Dec 19 06:12	30°0'0		conjunction	2948 Aug 10 01:29	18°0'40.59	0°38'06
direct	2943 Jan 30 00:25	28°0'29.04		minimum elong	2948 Aug 10 01:27	18°0'40.58	0°38'06
	2943 Mar 11 23:32	0°0		max. Earth dist.	2948 Aug 10 05:46	18°0'42.21	10.11487 AU
evening set	2943 May 11 22:56	6°0'21.38		morning rise	2948 Aug 28 02:52	20°0'59.44	
				retrograde	2948 Dec 09 14:34	29°0'01.57	
conjunction	2943 May 29 15:26	8°0'37.06	-1°-46'-13	opposition	2949 Feb 14 05:24	25°0'35.16	1°06'04
minimum elong	2943 May 29 15:29	8°0'37.07	1°46'13	min. Earth dist.	2949 Feb 14 02:17	25°0'35.54	8.14309 AU
max. Earth dist.	2943 May 29 17:21	8°0'37.42	10.17258 AU	direct	2949 Apr 22 21:46	22°0'06.01	
morning rise	2943 Jun 16 11:53	10°0'53.48			2949 Aug 04 17:05	0°0	
retrograde	2943 Oct 01 01:36	19°0'07.15		evening set	2949 Aug 06 18:15	0°0'15.22	
opposition	2943 Dec 08 03:39	15°0'37.39	-1°-59'-15				
min. Earth dist.	2943 Dec 08 01:45	15°0'38.02	8.14079 AU	conjunction	2949 Aug 24 18:48	2°0'33.02	1°07'23
direct	2944 Feb 12 18:23	12°0'11.15		minimum elong	2949 Aug 24 18:45	2°0'33.01	1°07'23
evening set	2944 May 25 09:21	20°0'10.14		max. Earth dist.	2949 Aug 24 22:23	2°0'34.10	10.17637 AU
				morning rise	2949 Sep 11 16:44	4°0'49.49	
conjunction	2944 Jun 12 06:27	22°0'27.54	-1°-24'-7	retrograde	2949 Dec 23 08:15	12°0'44.58	
minimum elong	2944 Jun 12 06:30	22°0'27.55	1°24'08	opposition	2950 Feb 28 00:45	9°0'19.35	1°39'56
max. Earth dist.	2944 Jun 12 09:36	22°0'28.55	10.11263 AU	min. Earth dist.	2950 Feb 27 21:52	9°0'20.10	8.21491 AU
morning rise	2944 Jun 30 06:35	24°0'46.32		direct	2950 May 07 05:29	5°0'50.40	
	2944 Aug 15 11:49	0°0		evening set	2950 Aug 21 08:17	13°0'56.37	
retrograde	2944 Oct 14 12:00	3°0'01.49					
	2944 Dec 15 11:12	30°0'0		conjunction	2950 Sep 08 05:16	16°0'12.02	1°32'27
opposition	2944 Dec 21 03:16	29°0'32.08	-1°-28'-26	minimum elong	2950 Sep 08 05:13	16°0'12.01	1°32'27
min. Earth dist.	2944 Dec 21 00:28	29°0'32.43	8.09137 AU	max. Earth dist.	2950 Sep 08 08:18	16°0'13.00	10.25690 AU
direct	2945 Feb 25 18:06	26°0'04.41		morning rise	2950 Sep 25 22:47	18°0'26.22	
	2945 May 04 18:09	0°0		retrograde	2951 Jan 05 19:18	26°0'13.44	
evening set	2945 Jun 09 02:18	4°0'09.02		opposition	2951 Mar 13 15:51	22°0'49.41	2°07'34
				min. Earth dist.	2951 Mar 13 12:55	22°0'50.16	8.30349 AU
conjunction	2945 Jun 27 03:09	6°0'28.19	0°-56'-52	direct	2951 May 21 09:23	19°0'21.20	
minimum elong	2945 Jun 27 03:11	6°0'28.20	0°56'53	evening set	2951 Sep 04 14:31	27°0'22.16	
max. Earth dist.	2945 Jun 27 07:25	6°0'29.42	10.07515 AU				
morning rise	2945 Jul 15 05:52	8°0'48.14		conjunction	2951 Sep 22 07:18	29°0'35.07	1°52'01
retrograde	2945 Oct 28 22:33	17°0'03.11		minimum elong	2951 Sep 22 07:15	29°0'35.06	1°52'01
opposition	2946 Jan 04 04:34	13°0'33.46	0°-52'-3	max. Earth dist.	2951 Sep 22 10:08	29°0'36.00	10.35156 AU
min. Earth dist.	2946 Jan 04 00:52	13°0'34.32	8.06588 AU		2951 Sep 25 14:18	0°0	
direct	2946 Mar 11 22:05	10°0'05.29		morning rise	2951 Oct 09 19:54	1°0'46.40	
evening set	2946 Jun 23 23:37	18°0'13.44		retrograde	2952 Jan 19 01:03	9°0'25.57	
				opposition	2952 Mar 26 02:25	6°0'03.14	2°27'46
conjunction	2946 Jul 12 02:52	20°0'33.53	0°-26'-5	min. Earth dist.	2952 Mar 25 23:46	6°0'03.45	8.40336 AU
minimum elong	2946 Jul 12 02:53	20°0'33.53	0°26'06	direct	2952 Jun 03 07:18	2°0'35.40	
max. Earth dist.	2946 Jul 12 07:46	20°0'35.28	10.06266 AU	evening set	2952 Sep 17 11:34	10°0'30.17	
morning rise	2946 Jul 30 06:44	22°0'54.16					
	2946 Oct 08 05:23	0°0		conjunction	2952 Oct 04 23:50	12°0'40.25	2°05'21
retrograde	2946 Nov 12 07:34	1°0'06.48		minimum elong	2952 Oct 04 23:48	12°0'40.24	2°05'21
	2946 Dec 17 15:10	30°0'0		max. Earth dist.	2952 Oct 05 02:14	12°0'41.10	10.45461 AU



morning rise	2952 Oct 22 07:28	14° <del>2</del> 49'10		morning rise	2959 Jan 03 05:37	27° <del>2</del> 29'36	
retrograde	2953 Jan 30 23:29	22° <del>2</del> 20'27			2959 Jan 25 18:20	0° <del>3</del>	
opposition	2953 Apr 08 08:00	18° <del>2</del> 58'59	2°39'55	retrograde	2959 Apr 13 04:42	4° <del>3</del> 31'59	
min. Earth dist.	2953 Apr 08 06:20	18° <del>2</del> 59'18	8.50860 AU	opposition	2959 Jun 22 00:50	1° <del>3</del> 14'17	1°23'46
direct	2953 Jun 16 23:58	15° <del>2</del> 32'21		min. Earth dist.	2959 Jun 22 04:38	1° <del>3</del> 13'34	8.97235 AU
evening set	2953 Sep 30 22:41	23° <del>2</del> 19'49			2959 Jul 09 02:27	30° <del>R</del> <del>2</del>	
				direct	2959 Sep 01 01:00	27° <del>2</del> 53'42	
conjunction	2953 Oct 18 06:32	25° <del>2</del> 27'18	2°12'08		2959 Oct 23 01:48	0° <del>3</del>	
minimum elong	2953 Oct 18 06:31	25° <del>2</del> 27'17	2°12'08	evening set	2959 Dec 12 10:36	5° <del>3</del> 03'05	
max. Earth dist.	2953 Oct 18 07:44	25° <del>2</del> 27'40	10.56004 AU				
morning rise	2953 Nov 04 09:43	27° <del>2</del> 33'24		conjunction	2959 Dec 29 03:35	7° <del>3</del> 01'18	0°56'35
	2953 Nov 25 10:41	0° <del>M</del>		minimum elong	2959 Dec 29 03:37	7° <del>3</del> 01'18	0°56'34
retrograde	2954 Feb 12 14:21	4° <del>M</del> 57'11		max. Earth dist.	2959 Dec 28 22:49	6° <del>3</del> 59'53	10.98543 AU
opposition	2954 Apr 21 08:35	1° <del>M</del> 36'52	2°43'58	morning rise	2960 Jan 14 19:11	8° <del>3</del> 59'05	
min. Earth dist.	2954 Apr 21 08:40	1° <del>M</del> 36'51	8.61308 AU	retrograde	2960 Apr 24 02:31	16° <del>3</del> 01'07	
	2954 May 13 01:12	30° <del>R</del> <del>2</del>		opposition	2960 Jul 03 06:45	12° <del>3</del> 43'10	0°54'08
direct	2954 Jun 30 11:18	28° <del>2</del> 11'17		min. Earth dist.	2960 Jul 03 10:37	12° <del>3</del> 42'27	8.99425 AU
	2954 Aug 16 23:39	0° <del>M</del>		direct	2960 Sep 12 06:21	9° <del>3</del> 23'12	
evening set	2954 Oct 13 23:50	5° <del>M</del> 51'17		evening set	2960 Dec 22 22:46	16° <del>3</del> 29'18	
conjunction	2954 Oct 31 03:41	7° <del>M</del> 56'21	2°12'28	conjunction	2961 Jan 08 15:07	18° <del>3</del> 27'10	0°31'27
minimum elong	2954 Oct 31 03:42	7° <del>M</del> 56'21	2°12'28	minimum elong	2961 Jan 08 15:08	18° <del>3</del> 27'10	0°31'27
max. Earth dist.	2954 Oct 31 02:39	7° <del>M</del> 56'02	10.66179 AU	max. Earth dist.	2961 Jan 08 10:54	18° <del>3</del> 25'55	10.99772 AU
morning rise	2954 Nov 17 03:14	10° <del>M</del> 00'08		morning rise	2961 Jan 25 06:43	20° <del>3</del> 24'51	
	2955 Jan 03 19:00	15° <del>M</del>		retrograde	2961 May 06 01:38	27° <del>3</del> 28'00	
retrograde	2955 Feb 25 00:24	17° <del>M</del> 17'19		opposition	2961 Jul 15 12:07	24° <del>3</del> 09'31	0°22'28
	2955 Apr 20 11:35	15° <del>R</del> <del>M</del>		min. Earth dist.	2961 Jul 15 15:10	24° <del>3</del> 08'58	8.99642 AU
opposition	2955 May 04 04:25	13° <del>M</del> 58'00	2°40'16	direct	2961 Sep 24 07:11	20° <del>3</del> 50'03	
min. Earth dist.	2955 May 04 05:48	13° <del>M</del> 57'44	8.71106 AU	evening set	2962 Jan 03 10:03	27° <del>3</del> 54'10	
direct	2955 Jul 13 16:04	10° <del>M</del> 33'32					
	2955 Sep 28 22:51	15° <del>M</del>		conjunction	2962 Jan 20 02:06	29° <del>3</del> 52'03	0°05'08
evening set	2955 Oct 26 15:53	18° <del>M</del> 06'13		minimum elong	2962 Jan 20 02:06	29° <del>3</del> 52'02	0°05'09
				behind sun begin	2962 Jan 19 19:19	29° <del>3</del> 50'03	
conjunction	2955 Nov 12 16:21	20° <del>M</del> 09'12	2°06'42	behind sun end	2962 Jan 20 08:52	29° <del>3</del> 54'02	
minimum elong	2955 Nov 12 16:22	20° <del>M</del> 09'13	2°06'42	max. Earth dist.	2962 Jan 19 22:34	29° <del>3</del> 51'02	10.99005 AU
max. Earth dist.	2955 Nov 12 13:45	20° <del>M</del> 08'25	10.75499 AU		2962 Jan 21 04:56	0° <del>≈</del>	
morning rise	2955 Nov 29 12:56	22° <del>M</del> 11'01		morning rise	2962 Feb 05 18:01	1° <del>≈</del> 49'57	
retrograde	2956 Mar 08 05:09	29° <del>M</del> 22'42		desc. node	2962 Apr 01 16:09	7° <del>≈</del> 12'52	
opposition	2956 May 15 20:05	26° <del>M</del> 04'10	2°29'30	retrograde	2962 May 18 02:57	8° <del>≈</del> 55'37	
min. Earth dist.	2956 May 15 21:55	26° <del>M</del> 03'49	8.79859 AU	opposition	2962 Jul 27 17:47	5° <del>≈</del> 36'29	0°-10'-8
direct	2956 Jul 25 14:23	22° <del>M</del> 40'50		min. Earth dist.	2962 Jul 27 20:40	5° <del>≈</del> 35'57	8.97879 AU
evening set	2956 Nov 06 23:40	0° <del>2</del> 06'35		direct	2962 Oct 06 06:09	2° <del>≈</del> 17'17	
	2956 Nov 06 01:17	0° <del>2</del>		evening set	2963 Jan 14 21:59	9° <del>≈</del> 20'53	
conjunction	2956 Nov 23 21:32	2° <del>2</del> 07'50	1°55'27	conjunction	2963 Jan 31 13:51	11° <del>≈</del> 19'04	0°-21'-35
minimum elong	2956 Nov 23 21:34	2° <del>2</del> 07'51	1°55'28	minimum elong	2963 Jan 31 13:50	11° <del>≈</del> 19'04	0°21'35
max. Earth dist.	2956 Nov 23 18:38	2° <del>2</del> 06'58	10.83644 AU	max. Earth dist.	2963 Jan 31 09:59	11° <del>≈</del> 17'56	10.96272 AU
morning rise	2956 Dec 10 15:48	4° <del>2</del> 08'05		morning rise	2963 Feb 17 06:34	13° <del>≈</del> 17'32	
retrograde	2957 Mar 20 07:31	11° <del>2</del> 15'25			2963 Mar 04 08:14	15° <del>≈</del>	
opposition	2957 May 28 08:20	7° <del>2</del> 57'25	2°12'30	retrograde	2963 May 30 07:18	20° <del>≈</del> 27'10	
min. Earth dist.	2957 May 28 10:17	7° <del>2</del> 57'03	8.87288 AU	opposition	2963 Aug 09 01:03	17° <del>≈</del> 07'12	0°-42'-33
direct	2957 Aug 07 07:57	4° <del>2</del> 35'09		min. Earth dist.	2963 Aug 09 04:13	17° <del>≈</del> 06'37	8.94200 AU
evening set	2957 Nov 19 00:20	11° <del>2</del> 54'31			2963 Sep 08 23:04	15° <del>R</del> <del>≈</del>	
				direct	2963 Oct 18 04:29	13° <del>≈</del> 48'07	
conjunction	2957 Dec 05 20:11	13° <del>2</del> 54'25	1°39'28		2963 Nov 25 10:49	15° <del>≈</del>	
minimum elong	2957 Dec 05 20:13	13° <del>2</del> 54'26	1°39'28	evening set	2964 Jan 26 11:51	20° <del>≈</del> 52'36	
max. Earth dist.	2957 Dec 05 17:20	13° <del>2</del> 53'34	10.90343 AU				
morning rise	2957 Dec 22 12:53	15° <del>2</del> 53'28		conjunction	2964 Feb 12 03:55	22° <del>≈</del> 51'24	0°-47'-31
retrograde	2958 Apr 01 08:20	22° <del>2</del> 57'41		minimum elong	2964 Feb 12 03:53	22° <del>≈</del> 51'23	0°47'32
opposition	2958 Jun 09 17:42	19° <del>2</del> 39'57	1°50'14	max. Earth dist.	2964 Feb 11 23:46	22° <del>≈</del> 50'09	10.91671 AU
min. Earth dist.	2958 Jun 09 20:33	19° <del>2</del> 39'25	8.93145 AU	morning rise	2964 Feb 28 21:48	24° <del>≈</del> 50'44	
direct	2958 Aug 19 18:37	16° <del>2</del> 18'37			2964 Apr 19 23:25	0° <del>⋈</del>	
evening set	2958 Nov 30 19:34	23° <del>2</del> 32'27		retrograde	2964 Jun 10 14:42	2° <del>⋈</del> 05'43	
					2964 Aug 03 05:49	30° <del>R</del> <del>≈</del>	
conjunction	2958 Dec 17 13:46	25° <del>2</del> 31'21	1°19'33	opposition	2964 Aug 20 10:37	28° <del>≈</del> 44'44	-1°-13'-33
minimum elong	2958 Dec 17 13:48	25° <del>2</del> 31'21	1°19'33	min. Earth dist.	2964 Aug 20 13:38	28° <del>≈</del> 44'10	8.88735 AU
max. Earth dist.	2958 Dec 17 09:49	25° <del>2</del> 30'10	10.95364 AU	direct	2964 Oct 29 04:39	25° <del>≈</del> 25'35	






























































































































	2965 Jan 14 15:04	0°♄			2971 Apr 01 12:17	15°♄	
evening set	2965 Feb 06 05:21	2°♄32'22		evening set	2971 Apr 22 12:48	17°♄30'51	
conjunction	2965 Feb 22 22:12	4°♄32'07	-1°-11'-47	conjunction	2971 May 09 22:31	19°♄42'38	-2°-6'-21
minimum elong	2965 Feb 22 22:10	4°♄32'07	1°11'47	minimum elong	2971 May 09 22:33	19°♄42'39	2°06'21
max. Earth dist.	2965 Feb 22 19:08	4°♄31'12	10.85361 AU	max. Earth dist.	2971 May 10 01:38	19°♄43'37	10.29851 AU
morning rise	2965 Mar 11 17:29	6°♄32'38		morning rise	2971 May 27 12:32	21°♄55'49	
retrograde	2965 Jun 23 04:59	13°♄54'08			2971 Sep 03 19:38	0°♄	
opposition	2965 Sep 01 23:02	10°♄32'01	-1°-41'-57	retrograde	2971 Sep 11 05:48	0°♄02'57	
min. Earth dist.	2965 Sep 02 01:00	10°♄31'39	8.81677 AU		2971 Sep 18 16:58	30°♄	
direct	2965 Nov 10 07:30	7°♄12'37		opposition	2971 Nov 18 23:45	26°♄34'35	-2°-29'-47
evening set	2966 Feb 18 03:50	14°♄23'00		min. Earth dist.	2971 Nov 18 20:54	26°♄35'09	8.25788 AU
				direct	2972 Jan 24 19:24	23°♄10'29	
conjunction	2966 Mar 06 21:57	16°♄24'05	-1°-33'-19		2972 Apr 27 10:48	0°♄	
minimum elong	2966 Mar 06 21:54	16°♄24'04	1°33'20	evening set	2972 May 05 11:54	0°♄59'46	
max. Earth dist.	2966 Mar 06 20:06	16°♄23'31	10.77573 AU				
morning rise	2966 Mar 23 18:59	18°♄26'05		conjunction	2972 May 23 02:22	3°♄14'04	-1°-53'-21
retrograde	2966 Jul 06 01:43	25°♄55'01		minimum elong	2972 May 23 02:25	3°♄14'05	1°53'21
opposition	2966 Sep 14 15:22	22°♄31'44	-2°-6'-27	max. Earth dist.	2972 May 23 05:59	3°♄15'13	10.21818 AU
min. Earth dist.	2966 Sep 14 16:14	22°♄31'34	8.73292 AU	morning rise	2972 Jun 09 20:47	5°♄29'39	
direct	2966 Nov 22 11:19	19°♄11'56		retrograde	2972 Sep 24 13:54	13°♄41'14	
evening set	2967 Mar 02 08:37	26°♄27'08		opposition	2972 Dec 01 19:25	10°♄12'23	-2°-9'-37
				min. Earth dist.	2972 Dec 01 16:18	10°♄13'01	8.18452 AU
conjunction	2967 Mar 19 04:23	28°♄29'48	-1°-51'-6	direct	2973 Feb 06 09:31	6°♄47'09	
minimum elong	2967 Mar 19 04:21	28°♄29'47	1°51'08	evening set	2973 May 19 19:10	14°♄42'57	
max. Earth dist.	2967 Mar 19 03:03	28°♄29'24	10.68622 AU				
	2967 Mar 31 12:10	0°♄		conjunction	2973 Jun 06 14:12	16°♄59'31	-1°-33'-45
morning rise	2967 Apr 05 03:47	0°♄33'37		minimum elong	2973 Jun 06 14:16	16°♄59'32	1°33'45
retrograde	2967 Jul 19 04:06	8°♄10'40		max. Earth dist.	2973 Jun 06 17:33	17°♄00'35	10.15315 AU
opposition	2967 Sep 27 12:16	4°♄46'10	-2°-25'-47	morning rise	2973 Jun 24 12:40	19°♄17'10	
min. Earth dist.	2967 Sep 27 12:33	4°♄46'06	8.63933 AU	retrograde	2973 Oct 09 00:08	27°♄31'16	
direct	2967 Dec 04 20:20	1°♄25'46		opposition	2973 Dec 15 17:54	24°♄02'15	-1°-41'-40
evening set	2968 Mar 13 20:50	8°♄46'51		min. Earth dist.	2973 Dec 15 15:10	24°♄02'49	8.12797 AU
				direct	2974 Feb 20 07:02	20°♄35'54	
conjunction	2968 Mar 30 18:56	10°♄51'26	-2°-4'-7	evening set	2974 Jun 03 09:16	28°♄37'28	
minimum elong	2968 Mar 30 18:54	10°♄51'26	2°04'09		2974 Jun 14 03:21	0°♄	
max. Earth dist.	2968 Mar 30 17:47	10°♄51'05	10.58913 AU				
morning rise	2968 Apr 16 21:20	12°♄57'21		conjunction	2974 Jun 21 08:22	0°♄55'53	-1°-8'-29
retrograde	2968 Jul 31 13:33	20°♄42'44		minimum elong	2974 Jun 21 08:25	0°♄55'54	1°08'30
opposition	2968 Oct 09 13:56	17°♄17'05	-2°-38'-44	max. Earth dist.	2974 Jun 21 11:14	0°♄56'49	10.10660 AU
min. Earth dist.	2968 Oct 09 14:04	17°♄17'03	8.54030 AU	morning rise	2974 Jul 09 10:03	3°♄15'06	
direct	2968 Dec 16 10:37	13°♄55'56		retrograde	2974 Oct 23 09:43	11°♄29'47	
evening set	2969 Mar 26 17:15	21°♄23'41		opposition	2974 Dec 29 18:29	8°♄00'55	-1°-7'-23
				min. Earth dist.	2974 Dec 29 16:06	8°♄01'25	8.09163 AU
conjunction	2969 Apr 12 18:34	23°♄30'29	-2°-11'-27	direct	2975 Mar 06 09:59	4°♄33'36	
minimum elong	2969 Apr 12 18:33	23°♄30'29	2°11'29	evening set	2975 Jun 18 04:38	12°♄39'45	
max. Earth dist.	2969 Apr 12 18:29	23°♄30'27	10.48890 AU				
morning rise	2969 Apr 30 00:29	25°♄38'43		conjunction	2975 Jul 06 06:47	14°♄59'24	0°-38'-59
	2969 Jun 08 00:55	0°♄		minimum elong	2975 Jul 06 06:49	14°♄59'25	0°38'59
retrograde	2969 Aug 14 05:12	3°♄32'14		max. Earth dist.	2975 Jul 06 09:37	15°♄00'19	10.08195 AU
opposition	2969 Oct 22 20:32	0°♄05'31	-2°-44'-12	morning rise	2975 Jul 24 10:24	17°♄19'29	
min. Earth dist.	2969 Oct 22 20:01	0°♄05'37	8.44041 AU	retrograde	2975 Nov 06 18:23	25°♄32'42	
	2969 Oct 24 00:37	30°♄		opposition	2976 Jan 12 19:54	22°♄04'15	0°-28'-52
direct	2969 Dec 29 06:53	26°♄43'28		min. Earth dist.	2976 Jan 12 17:24	22°♄04'45	8.07877 AU
	2970 Mar 01 14:52	0°♄		direct	2976 Mar 19 16:15	18°♄36'07	
evening set	2970 Apr 08 22:30	4°♄18'24		evening set	2976 Jul 02 03:26	26°♄45'19	
conjunction	2970 Apr 26 03:44	6°♄27'38	-2°-12'-21	conjunction	2976 Jul 20 07:10	29°♄05'24	0°-7'-6
minimum elong	2970 Apr 26 03:44	6°♄27'39	2°12'22	minimum elong	2976 Jul 20 07:10	29°♄05'24	0°07'07
max. Earth dist.	2970 Apr 26 05:19	6°♄28'08	10.39033 AU	behind sun begin	2976 Jul 20 00:25	29°♄03'14	
morning rise	2970 May 13 13:30	8°♄38'19		behind sun end	2976 Jul 20 13:56	29°♄07'34	
	2970 Jul 14 13:22	15°♄		max. Earth dist.	2976 Jul 20 10:23	29°♄06'24	10.08176 AU
retrograde	2970 Aug 28 02:20	16°♄39'16			2976 Jul 27 07:59	0°♄	
	2970 Oct 12 09:16	15°♄		morning rise	2976 Aug 07 11:02	1°♄25'29	
opposition	2970 Nov 05 07:54	13°♄11'38	-2°-41'-21	asc. node	2976 Oct 11 00:36	8°♄08'52	
min. Earth dist.	2970 Nov 05 06:13	13°♄11'58	8.34462 AU	retrograde	2976 Nov 20 00:49	9°♄35'11	
direct	2971 Jan 11 10:34	9°♄48'37		opposition	2977 Jan 25 20:45	6°♄07'23	0°11'22



min. Earth dist.	2977 Jan 25 17:46	6°♌08'00	8.09110 AU		2983 Oct 01 17:33	0°♍	
direct	2977 Apr 03 00:02	2°♌38'41		evening set	2983 Oct 08 21:40	0°♍51'09	
evening set	2977 Jul 17 02:48	10°♌49'06					
				conjunction	2983 Oct 26 03:17	2°♍57'14	2°13'10
conjunction	2977 Aug 04 06:26	13°♌08'43	0°25'12	minimum elong	2983 Oct 26 03:17	2°♍57'14	2°13'09
minimum elong	2977 Aug 04 06:25	13°♌08'42	0°25'12	max. Earth dist.	2983 Oct 26 03:25	2°♍57'17	10.61214 AU
max. Earth dist.	2977 Aug 04 10:07	13°♌09'54	10.10667 AU	morning rise	2983 Nov 12 04:23	5°♍01'59	
	2977 Aug 18 16:41	15°♌		retrograde	2984 Feb 20 03:14	12°♍21'41	
morning rise	2977 Aug 22 08:48	15°♌27'56		opposition	2984 Apr 28 03:40	9°♍01'25	2°42'51
retrograde	2977 Dec 04 04:03	23°♌32'23		min. Earth dist.	2984 Apr 28 03:16	9°♍01'30	8.66379 AU
opposition	2978 Feb 08 20:02	20°♌05'27	0°50'41	direct	2984 Jul 07 13:06	5°♍35'59	
min. Earth dist.	2978 Feb 08 16:41	20°♌06'08	8.12821 AU	evening set	2984 Oct 20 16:57	13°♍11'28	
direct	2978 Apr 17 08:19	16°♌36'26			2984 Nov 04 16:41	15°♍	
evening set	2978 Jul 31 23:49	24°♌46'06					
				conjunction	2984 Nov 06 18:59	15°♍15'18	2°09'55
conjunction	2978 Aug 19 01:41	27°♌04'26	0°55'43	minimum elong	2984 Nov 06 19:00	15°♍15'18	2°09'55
minimum elong	2978 Aug 19 01:39	27°♌04'25	0°55'43	max. Earth dist.	2984 Nov 06 18:51	15°♍15'16	10.71119 AU
max. Earth dist.	2978 Aug 19 05:34	27°♌05'41	10.15526 AU	morning rise	2984 Nov 23 16:38	17°♍17'53	
morning rise	2978 Sep 06 01:05	29°♌22'00		retrograde	2985 Mar 03 10:19	24°♍31'27	
	2978 Sep 11 02:57	0°♎		opposition	2985 May 10 20:37	21°♍12'07	2°34'59
retrograde	2978 Dec 18 00:55	7°♎19'53		min. Earth dist.	2985 May 10 21:17	21°♍11'59	8.75905 AU
opposition	2979 Feb 22 16:27	3°♎53'58	1°26'34	direct	2985 Jul 20 12:16	17°♍47'52	
min. Earth dist.	2979 Feb 22 13:18	3°♎54'36	8.18776 AU	evening set	2985 Nov 02 03:34	25°♍16'03	
direct	2979 May 01 16:02	0°♎24'54					
evening set	2979 Aug 15 16:13	8°♎32'00		conjunction	2985 Nov 19 02:32	27°♍17'57	2°00'56
				minimum elong	2985 Nov 19 02:33	27°♍17'58	2°00'57
conjunction	2979 Sep 02 14:57	10°♎48'21	1°22'40	max. Earth dist.	2985 Nov 19 01:09	27°♍17'32	10.80180 AU
minimum elong	2979 Sep 02 14:54	10°♎48'20	1°22'40	morning rise	2985 Dec 05 21:41	29°♍18'46	
max. Earth dist.	2979 Sep 02 18:23	10°♎49'27	10.22441 AU		2985 Dec 11 18:37	0°♏	
morning rise	2979 Sep 20 10:16	13°♎03'40		retrograde	2986 Mar 15 12:01	6°♏27'15	
retrograde	2979 Dec 31 14:51	20°♎54'01		opposition	2986 May 23 09:29	3°♏08'42	2°20'32
opposition	2980 Mar 07 08:58	17°♎29'15	1°56'58	min. Earth dist.	2986 May 23 11:14	3°♏08'22	8.84382 AU
min. Earth dist.	2980 Mar 07 06:47	17°♎29'41	8.26591 AU		2986 Jul 16 02:49	30°♎	
direct	2980 May 14 20:42	14°♎00'26		direct	2986 Aug 02 07:24	29°♍45'38	
evening set	2980 Aug 29 01:34	22°♎03'15			2986 Aug 19 10:21	0°♏	
				evening set	2986 Nov 14 06:32	7°♏07'04	
conjunction	2980 Sep 15 20:11	24°♎17'10	1°44'38				
minimum elong	2980 Sep 15 20:07	24°♎17'09	1°44'37	conjunction	2986 Dec 01 03:05	9°♏07'24	1°46'54
max. Earth dist.	2980 Sep 15 22:24	24°♎17'52	10.30977 AU	minimum elong	2986 Dec 01 03:07	9°♏07'25	1°46'54
morning rise	2980 Oct 03 10:49	26°♎29'51		max. Earth dist.	2986 Dec 01 00:26	9°♏06'36	10.88019 AU
	2980 Nov 02 14:35	0°♏		morning rise	2986 Dec 17 20:32	11°♏06'49	
retrograde	2981 Jan 12 22:06	4°♏12'14		retrograde	2987 Mar 27 11:38	18°♏11'29	
opposition	2981 Mar 20 21:07	0°♏48'40	2°20'22	opposition	2987 Jun 04 19:08	14°♏53'29	2°00'25
min. Earth dist.	2981 Mar 20 19:50	0°♏48'55	8.35788 AU	min. Earth dist.	2987 Jun 04 21:07	14°♏53'07	8.91456 AU
	2981 Mar 31 02:35	30°♎		direct	2987 Aug 14 20:31	11°♏31'37	
direct	2981 May 28 21:06	27°♎20'22		evening set	2987 Nov 26 03:10	18°♏47'02	
	2981 Jul 25 03:06	0°♏					
evening set	2981 Sep 12 01:58	5°♏17'27		conjunction	2987 Dec 12 21:57	20°♏46'10	1°28'35
				minimum elong	2987 Dec 12 21:59	20°♏46'10	1°28'35
conjunction	2981 Sep 29 16:02	7°♏28'42	2°00'37	max. Earth dist.	2987 Dec 12 19:18	20°♏45'22	10.94310 AU
minimum elong	2981 Sep 29 16:00	7°♏28'42	2°00'37	morning rise	2987 Dec 29 14:10	22°♏44'33	
max. Earth dist.	2981 Sep 29 17:02	7°♏29'01	10.40636 AU	retrograde	2988 Apr 07 09:19	29°♏46'47	
morning rise	2981 Oct 17 01:53	9°♏38'38		opposition	2988 Jun 16 02:20	26°♏29'06	1°35'39
retrograde	2982 Jan 25 21:43	17°♏13'02		min. Earth dist.	2988 Jun 16 04:03	26°♏28'47	8.96851 AU
opposition	2982 Apr 03 04:20	13°♏50'38	2°35'55	direct	2988 Aug 26 04:35	23°♏08'19	
min. Earth dist.	2982 Apr 03 03:25	13°♏50'48	8.45839 AU		2988 Dec 04 02:18	0°♑	
direct	2982 Jun 11 16:53	10°♏23'05		evening set	2988 Dec 06 19:04	0°♑18'43	
evening set	2982 Sep 25 16:45	18°♏13'26					
				conjunction	2988 Dec 23 12:37	2°♑17'00	1°06'52
conjunction	2982 Oct 13 02:24	20°♏22'02	2°10'09	minimum elong	2988 Dec 23 12:39	2°♑17'00	1°06'51
minimum elong	2982 Oct 13 02:23	20°♏22'02	2°10'08	max. Earth dist.	2988 Dec 23 10:17	2°♑16'18	10.98819 AU
max. Earth dist.	2982 Oct 13 02:41	20°♏22'07	10.50890 AU	morning rise	2989 Jan 09 04:06	4°♑14'44	
morning rise	2982 Oct 30 07:40	22°♏29'17		retrograde	2989 Apr 19 08:10	11°♑15'55	
retrograde	2983 Feb 07 14:32	29°♏56'00		opposition	2989 Jun 28 07:57	7°♑58'20	1°07'19
opposition	2983 Apr 16 06:18	26°♏34'42	2°43'21	min. Earth dist.	2989 Jun 28 10:01	7°♑57'57	9.00381 AU
min. Earth dist.	2983 Apr 16 05:29	26°♏34'51	8.56206 AU	direct	2989 Sep 07 08:40	4°♑38'27	
direct	2983 Jun 25 06:54	23°♏08'08		evening set	2989 Dec 18 07:45	11°♑45'00	



conjunction	2990 Jan 04 00:19	13°  42'46	0°42'36	direct	2995 Nov 17 08:26	14°  04'38	
minimum elong	2990 Jan 04 00:21	13°  42'47	0°42'36	evening set	2996 Feb 25 06:11	21°  16'45	
max. Earth dist.	2990 Jan 03 21:21	13°  41'53	11.01386 AU				
morning rise	2990 Jan 20 15:44	15°  40'14		conjunction	2996 Mar 13 00:56	23°  18'24	-1°-43'-35
retrograde	2990 May 01 05:04	22°  41'47		minimum elong	2996 Mar 13 00:53	23°  18'23	1°43'36
opposition	2990 Jul 10 12:48	19°  24'02	0°36'28	max. Earth dist.	2996 Mar 12 21:19	23°  17'18	10.74756 AU
min. Earth dist.	2990 Jul 10 15:48	19°  23'29	9.01918 AU	morning rise	2996 Mar 29 23:10	25°  21'07	
direct	2990 Sep 19 08:35	16°  04'52			2996 May 12 13:58	0° 	
evening set	2990 Dec 29 18:51	23°  08'52		retrograde	2996 Jul 12 14:07	2°  53'40	
					2996 Sep 14 13:25	30° 	
conjunction	2991 Jan 15 10:44	25°  06'26	0°16'44	opposition	2996 Sep 21 02:14	29°  30'12	-2°-17'-41
minimum elong	2991 Jan 15 10:45	25°  06'26	0°16'44	min. Earth dist.	2996 Sep 21 04:42	29°  30'43	8.69947 AU
max. Earth dist.	2991 Jan 15 06:47	25°  05'16	11.01913 AU	direct	2996 Nov 28 16:49	26°  10'27	
morning rise	2991 Feb 01 02:28	27°  03'57			2997 Feb 05 15:35	0° 	
	2991 Feb 27 23:00	0° 		evening set	2997 Mar 08 14:27	3°  28'07	
retrograde	2991 May 13 03:33	4°  07'22					
opposition	2991 Jul 22 17:40	0°  49'11	0°04'13	conjunction	2997 Mar 25 11:26	5°  31'37	-1°-58'-51
min. Earth dist.	2991 Jul 22 20:52	0°  48'36	9.01399 AU	minimum elong	2997 Mar 25 11:23	5°  31'36	1°58'52
	2991 Aug 02 22:49	30°  00'00		max. Earth dist.	2997 Mar 25 09:18	5°  30'57	10.64774 AU
desc. node	2991 Sep 09 10:55	27°  53'34		morning rise	2997 Apr 11 12:12	7°  36'20	
direct	2991 Oct 01 08:57	27°  30'31		retrograde	2997 Jul 25 20:31	15°  17'18	
	2991 Nov 26 20:21	0° 		opposition	2997 Oct 04 01:00	11°  52'25	-2°-33'-40
evening set	2992 Jan 10 05:45	4°  33'18		min. Earth dist.	2997 Oct 04 02:11	11°  52'11	8.59638 AU
				direct	2997 Dec 11 04:22	8°  31'47	
conjunction	2992 Jan 26 21:29	6°  31'01	0°-9'-53	evening set	2998 Mar 21 06:36	15°  55'54	
minimum elong	2992 Jan 26 21:29	6°  31'01	0°09'54				
behind sun begin	2992 Jan 26 15:46	6°  29'20		conjunction	2998 Apr 07 06:23	18°  01'33	-2°-8'-52
behind sun end	2992 Jan 27 03:11	6°  32'41		minimum elong	2998 Apr 07 06:22	18°  01'32	2°08'53
max. Earth dist.	2992 Jan 26 17:57	6°  29'59	11.00367 AU	max. Earth dist.	2998 Apr 07 05:00	18°  01'07	10.54205 AU
morning rise	2992 Feb 12 13:45	8°  28'54		morning rise	2998 Apr 24 10:22	20°  08'33	
	2992 Apr 27 05:23	15° 		retrograde	2998 Aug 08 09:55	27°  57'58	
retrograde	2992 May 24 06:49	15°  35'36		opposition	2998 Oct 17 04:55	24°  31'43	-2°-42'-40
	2992 Jun 20 17:12	15°  00'00		min. Earth dist.	2998 Oct 17 05:17	24°  31'39	8.48983 AU
opposition	2992 Aug 02 23:35	12°  16'44	0°-28'-18	direct	2998 Dec 23 20:04	21°  10'02	
min. Earth dist.	2992 Aug 03 02:13	12°  16'15	8.98817 AU	evening set	2999 Apr 03 07:15	28°  41'17	
direct	2992 Oct 12 07:52	8°  58'21			2999 Apr 13 21:01	0° 	
	2993 Jan 11 20:22	15° 					
evening set	2993 Jan 20 17:58	16°  01'16		conjunction	2999 Apr 20 10:29	0°  49'19	-2°-12'-47
				minimum elong	2999 Apr 20 10:29	0°  49'19	2°12'48
conjunction	2993 Feb 06 09:54	17°  59'27	0°-36'-10	max. Earth dist.	2999 Apr 20 09:35	0°  49'02	10.43560 AU
minimum elong	2993 Feb 06 09:53	17°  59'27	0°36'10	morning rise	2999 May 07 18:20	2°  58'48	
max. Earth dist.	2993 Feb 06 06:56	17°  58'35	10.96752 AU	retrograde	2999 Aug 22 04:08	10°  56'14	
morning rise	2993 Feb 23 02:58	19°  58'03		opposition	2999 Oct 30 13:56	7°  28'46	-2°-43'-44
retrograde	2993 Jun 05 12:37	27°  09'26		min. Earth dist.	2999 Oct 30 13:52	7°  28'47	8.38503 AU
opposition	2993 Aug 15 07:19	23°  49'39	0°-59'-58	direct	3000 Jan 05 20:03	4°  05'54	
min. Earth dist.	2993 Aug 15 09:39	23°  49'13	8.94196 AU	evening set	3000 Apr 16 17:01	11°  04'40	
direct	2993 Oct 24 06:06	20°  31'17					
evening set	2994 Feb 01 09:19	27°  35'51		conjunction	3000 May 04 00:28	13°  55'17	-2°-9'-59
				minimum elong	3000 May 04 00:29	13°  55'17	2°09'59
conjunction	2994 Feb 18 01:39	29°  34'50	-1°-1'-13	max. Earth dist.	3000 May 04 00:11	13°  55'12	10.33368 AU
minimum elong	2994 Feb 18 01:37	29°  34'50	1°01'14		3000 May 12 13:14	15° 	
max. Earth dist.	2994 Feb 17 21:56	29°  33'44	10.91127 AU	morning rise	3000 May 21 12:38	16°  07'22	
	2994 Feb 21 13:43	0° 		retrograde	3000 Sep 05 04:16	24°  01'50	
morning rise	2994 Mar 06 20:00	1°  34'28		opposition	3000 Nov 13 03:34	20°  43'22	-2°-36'-13
retrograde	2994 Jun 18 00:05	8°  51'50		min. Earth dist.	3000 Nov 13 03:12	20°  43'26	8.28727 AU
opposition	2994 Aug 27 17:43	5°  30'59	-1°-29'-35	direct	3001 Jan 19 02:21	17°  19'15	
min. Earth dist.	2994 Aug 27 20:41	5°  30'26	8.87641 AU	evening set	3001 Apr 30 11:51	25°  05'31	
direct	2994 Nov 05 06:14	2°  12'23					
evening set	2995 Feb 13 05:00	9°  20'05		conjunction	3001 May 18 00:04	27°  18'46	-2°00'-10
				minimum elong	3001 May 18 00:07	27°  18'47	2°00'11
conjunction	2995 Mar 01 22:10	11°  20'14	-1°-24'-2	max. Earth dist.	3001 May 18 01:04	27°  19'05	10.24152 AU
minimum elong	2995 Mar 01 22:08	11°  20'13	1°24'03	morning rise	3001 Jun 04 16:41	29°  33'25	
max. Earth dist.	2995 Mar 01 17:49	11°  18'55	10.83680 AU		3001 Jun 08 06:09	0° 	
morning rise	2995 Mar 18 18:17	13°  21'15		retrograde	3001 Sep 19 09:33	7°  43'28	
retrograde	2995 Jun 30 16:12	20°  45'46		opposition	3001 Nov 26 21:33	4°  41'17	-2°-19'-57
opposition	2995 Sep 09 07:53	17°  41'23	-1°-55'-54	min. Earth dist.	3001 Nov 26 20:21	4°  41'31	8.20170 AU
min. Earth dist.	2995 Sep 09 11:02	17°  41'23	8.79428 AU	direct	3002 Feb 01 15:00	0° 	



evening set	3002 May 14 15:14	8° $\Pi$ 42'18		morning rise	3007 Aug 31 20:25	23° $\Omega$ 22'44	
					3007 Nov 03 18:03	0° $\eta$	
conjunction	3002 Jun 01 08:18	10° $\Pi$ 58'03	-1°-43'-30	retrograde	3007 Dec 13 04:59	1° $\eta$ 24'21	
minimum elong	3002 Jun 01 08:22	10° $\Pi$ 58'04	1°43'31		3008 Jan 22 04:32	30° $\kappa$ $\Omega$	
max. Earth dist.	3002 Jun 01 10:53	10° $\Pi$ 58'53	10.16411 AU	opposition	3008 Feb 17 21:04	27° $\Omega$ 57'44	1°10'56
morning rise	3002 Jun 19 05:05	13° $\Pi$ 15'00		min. Earth dist.	3008 Feb 17 17:50	27° $\Omega$ 58'23	8.14772 AU
retrograde	3002 Oct 03 18:21	21° $\Pi$ 28'51		direct	3008 Apr 25 15:50	24° $\Omega$ 28'27	
opposition	3002 Dec 10 19:04	17° $\Pi$ 59'13	-1°-55'-24		3008 Jul 18 17:01	0° $\eta$	
min. Earth dist.	3002 Dec 10 16:40	17° $\Pi$ 59'43	8.13318 AU	evening set	3008 Aug 09 11:51	2° $\eta$ 37'37	
direct	3003 Feb 15 10:02	14° $\Pi$ 32'44					
evening set	3003 May 29 02:28	22° $\Pi$ 32'26		conjunction	3008 Aug 27 12:06	4° $\eta$ 55'04	1°11'02
				minimum elong	3008 Aug 27 12:03	4° $\eta$ 55'03	1°11'02
conjunction	3003 Jun 16 00:02	24° $\Pi$ 50'19	-1°-20'-39	max. Earth dist.	3008 Aug 27 15:43	4° $\eta$ 56'14	10.18204 AU
minimum elong	3003 Jun 16 00:05	24° $\Pi$ 50'20	1°20'40	morning rise	3008 Sep 14 09:37	7° $\eta$ 11'39	
max. Earth dist.	3003 Jun 16 03:50	24° $\Pi$ 51'32	10.10607 AU	retrograde	3008 Dec 25 22:26	15° $\eta$ 06'08	
morning rise	3003 Jul 04 00:24	27° $\Pi$ 09'08		opposition	3009 Mar 02 15:56	11° $\eta$ 40'49	1°44'03
	3003 Jul 27 12:02	0° $\mathfrak{C}$		min. Earth dist.	3009 Mar 02 12:29	11° $\eta$ 41'31	8.22156 AU
retrograde	3003 Oct 18 04:45	5° $\mathfrak{C}$ 24'38		direct	3009 May 09 22:10	8° $\eta$ 11'54	
opposition	3003 Dec 24 19:05	1° $\mathfrak{C}$ 54'56	-1°-23'-44	evening set	3009 Aug 24 01:13	16° $\eta$ 17'29	
min. Earth dist.	3003 Dec 24 15:48	1° $\mathfrak{C}$ 55'36	8.08592 AU				
	3004 Jan 18 12:14	30° $\kappa$ $\Pi$		conjunction	3009 Sep 10 21:50	18° $\eta$ 32'40	1°35'24
direct	3004 Feb 29 09:56	28° $\Pi$ 27'23		minimum elong	3009 Sep 10 21:47	18° $\eta$ 32'39	1°35'24
	3004 Apr 10 17:10	0° $\mathfrak{C}$		max. Earth dist.	3009 Sep 11 01:31	18° $\eta$ 33'51	10.26441 AU
evening set	3004 Jun 11 20:04	6° $\mathfrak{C}$ 32'17		morning rise	3009 Sep 28 14:46	20° $\eta$ 46'43	
				retrograde	3010 Jan 08 10:29	28° $\eta$ 33'23	
conjunction	3004 Jun 29 21:13	8° $\mathfrak{C}$ 51'44	0°-52'-51	opposition	3010 Mar 16 06:44	25° $\eta$ 09'25	2°10'44
minimum elong	3004 Jun 29 21:15	8° $\mathfrak{C}$ 51'45	0°52'51	min. Earth dist.	3010 Mar 16 03:18	25° $\eta$ 10'06	8.31178 AU
max. Earth dist.	3004 Jun 30 01:39	8° $\mathfrak{C}$ 53'10	10.07094 AU	direct	3010 May 24 00:21	21° $\eta$ 41'08	
morning rise	3004 Jul 18 00:07	11° $\mathfrak{C}$ 11'46		evening set	3010 Sep 07 06:28	29° $\eta$ 41'30	
retrograde	3004 Oct 31 15:46	19° $\mathfrak{C}$ 26'42			3010 Sep 09 18:21	0° $\underline{\Omega}$	
opposition	3005 Jan 06 20:36	15° $\mathfrak{C}$ 57'18	0°-46'-48				
min. Earth dist.	3005 Jan 06 16:56	15° $\mathfrak{C}$ 58'04	8.06291 AU	conjunction	3010 Sep 24 22:49	1° $\underline{\Omega}$ 54'06	1°54'10
direct	3005 Mar 14 13:44	12° $\mathfrak{C}$ 28'54		minimum elong	3010 Sep 24 22:47	1° $\underline{\Omega}$ 54'05	1°54'09
evening set	3005 Jun 26 17:56	20° $\mathfrak{C}$ 37'33		max. Earth dist.	3010 Sep 25 02:26	1° $\underline{\Omega}$ 55'14	10.36054 AU
				morning rise	3010 Oct 12 10:49	4° $\underline{\Omega}$ 05'23	
conjunction	3005 Jul 14 21:14	22° $\mathfrak{C}$ 57'47	0°-21'-45	retrograde	3011 Jan 21 15:25	11° $\underline{\Omega}$ 43'56	
minimum elong	3005 Jul 14 21:15	22° $\mathfrak{C}$ 57'47	0°21'46	opposition	3011 Mar 29 16:51	8° $\underline{\Omega}$ 21'19	2°29'51
max. Earth dist.	3005 Jul 15 01:40	22° $\mathfrak{C}$ 59'13	10.06099 AU	min. Earth dist.	3011 Mar 29 14:16	8° $\underline{\Omega}$ 21'49	8.41300 AU
morning rise	3005 Aug 02 01:09	25° $\mathfrak{C}$ 18'12		direct	3011 Jun 06 22:04	4° $\underline{\Omega}$ 53'50	
	3005 Sep 11 15:34	0° $\Omega$		evening set	3011 Sep 21 02:38	12° $\underline{\Omega}$ 47'48	
retrograde	3005 Nov 15 00:53	3° $\Omega$ 30'27					
opposition	3006 Jan 20 22:17	0° $\Omega$ 01'42	0°-6'-56	conjunction	3011 Oct 08 14:25	14° $\underline{\Omega}$ 57'40	2°06'36
min. Earth dist.	3006 Jan 20 18:50	0° $\Omega$ 02'25	8.06581 AU	minimum elong	3011 Oct 08 14:23	14° $\underline{\Omega}$ 57'39	2°06'35
	3006 Jan 21 06:31	30° $\kappa$ $\mathfrak{C}$		max. Earth dist.	3011 Oct 08 16:56	14° $\underline{\Omega}$ 58'27	10.46484 AU
asc. node	3006 Mar 27 03:03	26° $\mathfrak{C}$ 32'52		morning rise	3011 Oct 25 21:34	17° $\underline{\Omega}$ 06'09	
direct	3006 Mar 28 20:50	26° $\mathfrak{C}$ 32'42		retrograde	3012 Feb 03 11:56	24° $\underline{\Omega}$ 36'40	
	3006 May 31 18:24	0° $\Omega$		opposition	3012 Apr 10 21:52	21° $\underline{\Omega}$ 15'21	2°40'52
evening set	3006 Jul 11 17:37	4° $\Omega$ 43'24		min. Earth dist.	3012 Apr 10 20:38	21° $\underline{\Omega}$ 15'35	8.51946 AU
				direct	3012 Jun 19 15:20	17° $\underline{\Omega}$ 48'49	
conjunction	3006 Jul 29 21:28	7° $\Omega$ 03'31	0°10'41	evening set	3012 Oct 03 12:47	25° $\underline{\Omega}$ 35'32	
minimum elong	3006 Jul 29 21:28	7° $\Omega$ 03'31	0°10'41				
behind sun begin	3006 Jul 29 15:53	7° $\Omega$ 01'43		conjunction	3012 Oct 20 20:07	27° $\underline{\Omega}$ 42'44	2°12'29
behind sun end	3006 Jul 30 03:04	7° $\Omega$ 05'19		minimum elong	3012 Oct 20 20:06	27° $\underline{\Omega}$ 42'44	2°12'28
max. Earth dist.	3006 Jul 30 01:34	7° $\Omega$ 04'49	10.07709 AU	max. Earth dist.	3012 Oct 20 20:55	27° $\underline{\Omega}$ 42'59	10.57149 AU
morning rise	3006 Aug 17 00:49	9° $\Omega$ 23'28		morning rise	3012 Nov 06 22:59	29° $\underline{\Omega}$ 48'35	
	3006 Oct 06 12:39	15° $\Omega$			3012 Nov 08 12:51	0° $\mathbb{M}$	
retrograde	3006 Nov 29 06:09	17° $\Omega$ 31'09		retrograde	3013 Feb 15 02:39	7° $\mathbb{M}$ 11'36	
	3007 Jan 23 07:54	15° $\kappa$ $\Omega$		opposition	3013 Apr 23 21:56	3° $\mathbb{M}$ 51'24	2°43'48
opposition	3007 Feb 03 22:49	14° $\Omega$ 03'21	0°33'10	min. Earth dist.	3013 Apr 23 21:54	3° $\mathbb{M}$ 51'24	8.62518 AU
min. Earth dist.	3007 Feb 03 19:35	14° $\Omega$ 04'01	8.09470 AU	direct	3013 Jul 03 01:46	0° $\mathbb{M}$ 25'57	
direct	3007 Apr 12 06:07	10° $\Omega$ 34'03		evening set	3013 Oct 16 12:46	8° $\mathbb{M}$ 05'01	
	3007 Jun 24 23:32	15° $\Omega$					
evening set	3007 Jul 26 16:28	18° $\Omega$ 44'56		conjunction	3013 Nov 02 16:12	10° $\mathbb{M}$ 09'49	2°11'56
				minimum elong	3013 Nov 02 16:13	10° $\mathbb{M}$ 09'49	2°11'55
conjunction	3007 Aug 13 19:16	21° $\Omega$ 04'06	0°42'14	max. Earth dist.	3013 Nov 02 15:13	10° $\mathbb{M}$ 09'31	10.67450 AU
minimum elong	3007 Aug 13 19:14	21° $\Omega$ 04'06	0°42'14	morning rise	3013 Nov 19 15:29	12° $\mathbb{M}$ 13'21	
max. Earth dist.	3007 Aug 13 23:04	21° $\Omega$ 05'20	10.11832 AU		3013 Dec 14 01:20	15° $\mathbb{M}$	



retrograde	2014 Feb 27 11:19	19° $\mathcal{M}$ 29'42		morning rise	3020 Jan 28 14:59	22° $\mathfrak{Z}$ 28'39	
opposition	2014 May 06 17:07	16° $\mathcal{M}$ 10'27	2°39'05	retrograde	3020 May 08 11:11	29° $\mathfrak{Z}$ 31'43	
min. Earth dist.	2014 May 06 17:43	16° $\mathcal{M}$ 10'20	8.72420 AU	opposition	3020 Jul 17 21:57	26° $\mathfrak{Z}$ 13'16	0°18'01
	2014 May 22 08:52	15° $\mathcal{R}\mathcal{M}$		min. Earth dist.	3020 Jul 18 01:08	26° $\mathfrak{Z}$ 12'41	8.99968 AU
direct	2014 Jul 16 05:47	12° $\mathcal{M}$ 46'08		direct	3020 Sep 26 16:32	22° $\mathfrak{Z}$ 53'52	
	2014 Sep 07 12:46	15° $\mathcal{M}$		evening set	3021 Jan 05 18:15	29° $\mathfrak{Z}$ 57'41	
evening set	2014 Oct 29 03:36	20° $\mathcal{M}$ 17'46			3021 Jan 06 02:13	0° $\approx$	
conjunction	2014 Nov 15 03:53	22° $\mathcal{M}$ 20'29	2°05'22	conjunction	3021 Jan 22 10:12	1° $\approx$ 55'32	0°01'28
minimum elong	2014 Nov 15 03:54	22° $\mathcal{M}$ 20'30	2°05'22	minimum elong	3021 Jan 22 10:12	1° $\approx$ 55'31	0°01'29
max. Earth dist.	2014 Nov 15 02:04	22° $\mathcal{M}$ 19'56	10.76839 AU	behind sun begin	3021 Jan 22 03:13	1° $\approx$ 53'29	
morning rise	2014 Dec 02 00:11	24° $\mathcal{M}$ 22'04		behind sun end	3021 Jan 22 17:11	1° $\approx$ 57'34	
	2015 Jan 27 19:43	0° $\mathfrak{Z}$		max. Earth dist.	3021 Jan 22 06:01	1° $\approx$ 54'20	10.99185 AU
retrograde	2015 Mar 11 16:04	1° $\mathfrak{Z}$ 32'55		morning rise	3021 Feb 08 02:13	3° $\approx$ 53'26	
	2015 Apr 24 20:39	30° $\mathcal{R}\mathcal{M}$		desc. node	3021 Feb 11 12:42	4° $\approx$ 17'15	
opposition	2015 May 19 07:59	28° $\mathcal{M}$ 14'27	2°27'23	retrograde	3021 May 20 12:55	10° $\approx$ 59'13	
min. Earth dist.	2015 May 19 09:14	28° $\mathcal{M}$ 14'13	8.81184 AU	opposition	3021 Jul 30 03:41	7° $\approx$ 40'04	0°-14'-35
direct	2015 Jul 29 03:57	24° $\mathcal{M}$ 51'17		min. Earth dist.	3021 Jul 30 07:22	7° $\approx$ 39'23	8.97912 AU
	2015 Oct 21 10:00	0° $\mathfrak{Z}$		direct	3021 Oct 08 14:50	4° $\approx$ 20'55	
evening set	2015 Nov 10 10:22	2° $\mathfrak{Z}$ 15'57		evening set	3022 Jan 17 06:09	11° $\approx$ 24'23	
conjunction	2015 Nov 27 08:06	4° $\mathfrak{Z}$ 17'00	1°53'26	conjunction	3022 Feb 02 21:58	13° $\approx$ 22'34	0°-25'-9
minimum elong	2015 Nov 27 08:08	4° $\mathfrak{Z}$ 17'01	1°53'26	minimum elong	3022 Feb 02 21:57	13° $\approx$ 22'34	0°25'10
max. Earth dist.	2015 Nov 27 05:50	4° $\mathfrak{Z}$ 16'19	10.84940 AU	max. Earth dist.	3022 Feb 02 17:14	13° $\approx$ 21'10	10.96156 AU
morning rise	2015 Dec 14 02:08	6° $\mathfrak{Z}$ 17'01			3022 Feb 16 14:47	15° $\approx$	
retrograde	2016 Mar 22 18:45	13° $\mathfrak{Z}$ 23'36		morning rise	3022 Feb 19 14:53	15° $\approx$ 21'05	
opposition	2016 May 30 19:40	10° $\mathfrak{Z}$ 05'42	2°09'36	retrograde	3022 Jun 01 15:41	22° $\approx$ 31'02	
min. Earth dist.	2016 May 30 21:54	10° $\mathfrak{Z}$ 05'17	8.88523 AU	opposition	3022 Aug 11 10:56	19° $\approx$ 11'00	0°-46'-50
direct	2016 Aug 09 18:40	6° $\mathfrak{Z}$ 43'36		min. Earth dist.	3022 Aug 11 14:42	19° $\approx$ 10'18	8.93936 AU
evening set	2016 Nov 21 10:14	14° $\mathfrak{Z}$ 01'58		direct	3022 Oct 20 13:47	15° $\approx$ 51'54	
				evening set	3023 Jan 28 20:12	22° $\approx$ 56'30	
conjunction	2016 Dec 08 05:51	16° $\mathfrak{Z}$ 01'41	1°36'51	conjunction	3023 Feb 14 12:22	24° $\approx$ 55'21	0°-50'-54
minimum elong	2016 Dec 08 05:53	16° $\mathfrak{Z}$ 01'42	1°36'52	minimum elong	3023 Feb 14 12:21	24° $\approx$ 55'21	0°50'55
max. Earth dist.	2016 Dec 08 02:35	16° $\mathfrak{Z}$ 00'43	10.91510 AU	max. Earth dist.	3023 Feb 14 08:17	24° $\approx$ 54'08	10.91255 AU
morning rise	2016 Dec 24 22:29	18° $\mathfrak{Z}$ 00'34		morning rise	3023 Mar 03 06:20	26° $\approx$ 54'45	
retrograde	2017 Apr 03 16:46	25° $\mathfrak{Z}$ 04'10			3023 Mar 31 06:52	0° $\mathfrak{H}$	
opposition	2017 Jun 12 04:35	21° $\mathfrak{Z}$ 46'32	1°46'43	retrograde	3023 Jun 14 01:08	4° $\mathfrak{H}$ 10'15	
min. Earth dist.	2017 Jun 12 08:05	21° $\mathfrak{Z}$ 45'53	8.94226 AU	opposition	3023 Aug 23 20:33	0° $\mathfrak{H}$ 49'10	-1°-17'-31
direct	2017 Aug 22 05:07	18° $\mathfrak{Z}$ 25'21		min. Earth dist.	3023 Aug 23 23:24	0° $\mathfrak{H}$ 48'38	8.88175 AU
evening set	2017 Dec 03 04:44	25° $\mathfrak{Z}$ 38'21			3023 Sep 03 21:54	30° $\mathcal{R}\mathcal{M}$	
conjunction	2017 Dec 19 22:45	27° $\mathfrak{Z}$ 37'05	1°16'29	direct	3023 Nov 01 14:54	27° $\approx$ 29'59	
minimum elong	2017 Dec 19 22:47	27° $\mathfrak{Z}$ 37'05	1°16'29		3023 Dec 27 07:19	0° $\mathfrak{H}$	
max. Earth dist.	2017 Dec 19 18:08	27° $\mathfrak{Z}$ 35'42	10.96351 AU	evening set	3024 Feb 09 14:05	4° $\mathfrak{H}$ 37'02	
morning rise	2018 Jan 05 14:41	29° $\mathfrak{Z}$ 35'12					
	2018 Jan 09 04:18	0° $\mathfrak{Z}$		conjunction	3024 Feb 26 07:04	6° $\mathfrak{H}$ 36'55	-1°-14'-49
retrograde	2018 Apr 15 14:10	6° $\mathfrak{Z}$ 37'10		minimum elong	3024 Feb 26 07:02	6° $\mathfrak{H}$ 36'54	1°14'50
opposition	2018 Jun 24 11:12	3° $\mathfrak{Z}$ 19'32	1°19'47	max. Earth dist.	3024 Feb 26 04:18	6° $\mathfrak{H}$ 36'05	10.84653 AU
min. Earth dist.	2018 Jun 24 15:03	3° $\mathfrak{Z}$ 18'49	8.98108 AU	morning rise	3024 Mar 14 02:23	8° $\mathfrak{H}$ 37'33	
	2018 Aug 30 04:41	30° $\mathcal{R}\mathcal{Z}$		retrograde	3024 Jun 25 16:27	15° $\mathfrak{H}$ 59'44	
direct	2018 Sep 03 12:51	29° $\mathfrak{Z}$ 59'05		opposition	3024 Sep 04 09:23	12° $\mathfrak{H}$ 37'29	-1°-45'-26
	2018 Sep 07 20:19	0° $\mathfrak{Z}$		min. Earth dist.	3024 Sep 04 11:07	12° $\mathfrak{H}$ 37'09	8.80839 AU
evening set	2018 Dec 14 19:11	7° $\mathfrak{Z}$ 07'47		direct	3024 Nov 12 15:55	9° $\mathfrak{H}$ 18'02	
				evening set	3025 Feb 20 13:09	16° $\mathfrak{H}$ 28'54	
conjunction	2018 Dec 31 12:11	9° $\mathfrak{Z}$ 05'54	0°53'11	conjunction	3025 Mar 09 07:20	18° $\mathfrak{H}$ 30'06	-1°-35'-53
minimum elong	2018 Dec 31 12:13	9° $\mathfrak{Z}$ 05'54	0°53'11	minimum elong	3025 Mar 09 07:17	18° $\mathfrak{H}$ 30'06	1°35'55
max. Earth dist.	2018 Dec 31 07:35	9° $\mathfrak{Z}$ 04'32	10.99297 AU	max. Earth dist.	3025 Mar 09 04:55	18° $\mathfrak{H}$ 29'22	10.76604 AU
morning rise	2019 Jan 17 03:47	11° $\mathfrak{Z}$ 03'36		morning rise	3025 Mar 26 04:35	20° $\mathfrak{H}$ 32'17	
retrograde	2019 Apr 27 11:55	18° $\mathfrak{Z}$ 05'23		retrograde	3025 Jul 08 12:59	28° $\mathfrak{H}$ 02'04	
opposition	2019 Jul 06 16:42	14° $\mathfrak{Z}$ 47'27	0°49'50	opposition	3025 Sep 17 02:14	24° $\mathfrak{H}$ 38'38	-2°-9'-17
min. Earth dist.	2019 Jul 06 20:09	14° $\mathfrak{Z}$ 46'49	9.00040 AU	min. Earth dist.	3025 Sep 17 03:32	24° $\mathfrak{H}$ 38'23	8.72207 AU
direct	2019 Sep 15 15:51	11° $\mathfrak{Z}$ 27'37		direct	3025 Nov 24 20:57	21° $\mathfrak{H}$ 18'43	
evening set	2019 Dec 26 07:03	18° $\mathfrak{Z}$ 33'12		evening set	3026 Mar 04 18:43	28° $\mathfrak{H}$ 34'37	
					3026 Mar 16 12:14	0° $\mathcal{Y}$	
conjunction	2020 Jan 11 23:27	20° $\mathfrak{Z}$ 31'01	0°27'52	conjunction	3026 Mar 21 14:36	0° $\mathcal{Y}$ 37'29	-1°-53'-5
minimum elong	2020 Jan 11 23:28	20° $\mathfrak{Z}$ 31'01	0°27'52				
max. Earth dist.	2020 Jan 11 19:35	20° $\mathfrak{Z}$ 29'52	11.00247 AU				



minimum elong	3026 Mar 21 14:34	0° $\Upsilon$ 37'28	1°53'06	conjunction	3032 Jun 09 07:11	19° $\Pi$ 21'31	-1°-30'-37
max. Earth dist.	3026 Mar 21 12:11	0° $\Upsilon$ 36'45	10.67428 AU	minimum elong	3032 Jun 09 07:15	19° $\Pi$ 21'32	1°30'37
morning rise	3026 Apr 07 14:20	2° $\Upsilon$ 41'31		max. Earth dist.	3032 Jun 09 10:27	19° $\Pi$ 22'34	10.14220 AU
retrograde	3026 Jul 21 16:21	10° $\Upsilon$ 19'31		morning rise	3032 Jun 27 06:11	21° $\Pi$ 39'29	
opposition	3026 Sep 29 23:35	6° $\Upsilon$ 54'52	-2°-27'-50	retrograde	3032 Oct 11 15:53	29° $\Pi$ 54'06	
min. Earth dist.	3026 Sep 30 00:45	6° $\Upsilon$ 54'38	8.62642 AU	opposition	3032 Dec 18 09:35	26° $\Pi$ 25'03	-1°-37'-20
direct	3026 Dec 07 06:25	3° $\Upsilon$ 34'19		min. Earth dist.	3032 Dec 18 06:56	26° $\Pi$ 25'35	8.11885 AU
evening set	3027 Mar 17 07:44	10° $\Upsilon$ 56'15		direct	3033 Feb 22 23:36	22° $\Pi$ 58'33	
					3033 May 29 00:00	0° $\Theta$	
conjunction	3027 Apr 03 06:07	13° $\Upsilon$ 01'06	-2°-5'-23	evening set	3033 Jun 06 02:47	1° $\Theta$ 00'55	
minimum elong	3027 Apr 03 06:05	13° $\Upsilon$ 01'05	2°05'24				
max. Earth dist.	3027 Apr 03 04:42	13° $\Upsilon$ 00'39	10.57535 AU	conjunction	3033 Jun 24 02:19	3° $\Theta$ 19'34	-1°-4'-41
morning rise	3027 Apr 20 08:50	15° $\Upsilon$ 07'16		minimum elong	3033 Jun 24 02:22	3° $\Theta$ 19'35	1°04'41
retrograde	3027 Aug 04 02:01	22° $\Upsilon$ 53'43		max. Earth dist.	3033 Jun 24 05:38	3° $\Theta$ 20'39	10.09951 AU
opposition	3027 Oct 13 01:54	19° $\Upsilon$ 27'53	-2°-39'-50	morning rise	3033 Jul 12 04:20	5° $\Theta$ 38'59	
min. Earth dist.	3027 Oct 13 02:21	19° $\Upsilon$ 27'48	8.52581 AU	retrograde	3033 Oct 26 01:44	13° $\Theta$ 53'49	
direct	3027 Dec 19 21:33	16° $\Upsilon$ 06'34		opposition	3034 Jan 01 10:32	10° $\Theta$ 24'56	-1°-2'-21
evening set	3028 Mar 29 05:00	23° $\Upsilon$ 35'18		min. Earth dist.	3034 Jan 01 07:49	10° $\Theta$ 25'30	8.08642 AU
				direct	3034 Mar 09 02:23	6° $\Theta$ 57'30	
conjunction	3028 Apr 15 06:46	25° $\Upsilon$ 42'25	-2°-11'-54	evening set	3034 Jun 20 22:44	15° $\Theta$ 04'10	
minimum elong	3028 Apr 15 06:46	25° $\Upsilon$ 42'25	2°11'55				
max. Earth dist.	3028 Apr 15 07:10	25° $\Upsilon$ 42'33	10.47383 AU	conjunction	3034 Jul 09 01:11	17° $\Theta$ 23'57	0°-34'-44
morning rise	3028 May 02 12:59	27° $\Upsilon$ 50'57		minimum elong	3034 Jul 09 01:13	17° $\Theta$ 23'58	0°34'45
	3028 May 20 16:24	0° $\mathcal{B}$		max. Earth dist.	3034 Jul 09 04:52	17° $\Theta$ 25'09	10.07858 AU
retrograde	3028 Aug 16 18:04	5° $\mathcal{B}$ 45'36		morning rise	3034 Jul 27 04:51	19° $\Theta$ 44'07	
opposition	3028 Oct 25 09:12	2° $\mathcal{B}$ 18'42	-2°-44'-15	retrograde	3034 Nov 09 11:28	27° $\Theta$ 57'13	
min. Earth dist.	3028 Oct 25 08:19	2° $\mathcal{B}$ 18'52	8.42498 AU	opposition	3035 Jan 15 12:08	24° $\Theta$ 28'47	0°-23'-26
	3028 Nov 26 18:02	30° $\mathcal{R}\Upsilon$		min. Earth dist.	3035 Jan 15 08:55	24° $\Theta$ 29'27	8.07710 AU
direct	3028 Dec 31 19:39	28° $\Upsilon$ 56'29		direct	3035 Mar 23 08:34	21° $\Theta$ 00'36	
	3029 Feb 04 04:23	0° $\mathcal{B}$		evening set	3035 Jul 05 21:51	29° $\Theta$ 10'06	
evening set	3029 Apr 11 11:27	6° $\mathcal{B}$ 32'29			3035 Jul 12 10:18	0° $\mathcal{Q}$	
conjunction	3029 Apr 28 17:12	8° $\mathcal{B}$ 42'06	-2°-11'-54	conjunction	3035 Jul 24 01:44	1° $\mathcal{Q}$ 30'12	0°-2'-42
minimum elong	3029 Apr 28 17:13	8° $\mathcal{B}$ 42'06	2°11'54	minimum elong	3035 Jul 24 01:42	1° $\mathcal{Q}$ 30'12	0°02'44
max. Earth dist.	3029 Apr 28 19:06	8° $\mathcal{B}$ 42'42	10.37470 AU	behind sun begin	3035 Jul 23 18:22	1° $\mathcal{Q}$ 27'51	
morning rise	3029 May 16 03:21	10° $\mathcal{B}$ 53'07		behind sun end	3035 Jul 24 09:03	1° $\mathcal{Q}$ 32'33	
	3029 Jun 21 04:40	15° $\mathcal{B}$		max. Earth dist.	3035 Jul 24 05:55	1° $\mathcal{Q}$ 31'32	10.08171 AU
retrograde	3029 Aug 30 17:48	18° $\mathcal{B}$ 55'10		morning rise	3035 Aug 11 05:24	3° $\mathcal{Q}$ 50'16	
opposition	3029 Nov 07 21:14	15° $\mathcal{B}$ 27'21	-2°-40'-15	asc. node	3035 Aug 24 04:31	5° $\mathcal{Q}$ 26'50	
min. Earth dist.	3029 Nov 07 19:08	15° $\mathcal{B}$ 27'46	8.32902 AU	retrograde	3035 Nov 23 18:23	11° $\mathcal{Q}$ 59'40	
	3029 Nov 13 15:02	15° $\mathcal{R}\mathcal{B}$		opposition	3036 Jan 29 13:02	8° $\mathcal{Q}$ 31'55	0°16'50
direct	3030 Jan 13 22:17	12° $\mathcal{B}$ 04'09		min. Earth dist.	3036 Jan 29 09:28	8° $\mathcal{Q}$ 32'39	8.09257 AU
	3030 Mar 13 06:38	15° $\mathcal{B}$		direct	3036 Apr 05 16:45	5° $\mathcal{Q}$ 03'12	
evening set	3030 Apr 25 02:59	19° $\mathcal{B}$ 47'32		evening set	3036 Jul 19 21:22	13° $\mathcal{Q}$ 13'45	
					3036 Aug 02 17:43	15° $\mathcal{Q}$	
conjunction	3030 May 12 13:10	21° $\mathcal{B}$ 59'42	-2°-4'-57				
minimum elong	3030 May 12 13:13	21° $\mathcal{B}$ 59'42	2°04'58	conjunction	3036 Aug 07 00:54	15° $\mathcal{Q}$ 33'17	0°29'30
max. Earth dist.	3030 May 12 16:01	22° $\mathcal{B}$ 00'36	10.28322 AU	minimum elong	3036 Aug 07 00:52	15° $\mathcal{Q}$ 33'16	0°29'29
morning rise	3030 May 30 03:42	24° $\mathcal{B}$ 13'16		max. Earth dist.	3036 Aug 07 05:10	15° $\mathcal{Q}$ 34'39	10.10959 AU
	3030 Jul 22 15:34	0° $\Pi$		morning rise	3036 Aug 25 02:56	17° $\mathcal{Q}$ 52'23	
retrograde	3030 Sep 13 22:49	2° $\Pi$ 21'22		retrograde	3036 Dec 06 20:40	25° $\mathcal{Q}$ 56'21	
	3030 Nov 07 10:14	30° $\mathcal{R}\mathcal{B}$		opposition	3037 Feb 11 12:17	22° $\mathcal{Q}$ 29'32	0°55'50
opposition	3030 Nov 21 13:57	28° $\mathcal{B}$ 52'53	-2°-27'-31	min. Earth dist.	3037 Feb 11 08:57	22° $\mathcal{Q}$ 30'13	8.13252 AU
min. Earth dist.	3030 Nov 21 11:06	28° $\mathcal{B}$ 53'28	8.24311 AU	direct	3037 Apr 20 01:33	19° $\mathcal{Q}$ 00'32	
direct	3031 Jan 27 07:33	25° $\mathcal{B}$ 28'37		evening set	3037 Aug 03 18:17	27° $\mathcal{Q}$ 10'10	
	3031 Apr 11 03:38	0° $\Pi$					
evening set	3031 May 09 03:15	3° $\Pi$ 19'04		conjunction	3037 Aug 21 19:47	29° $\mathcal{Q}$ 28'18	0°59'38
				minimum elong	3037 Aug 21 19:44	29° $\mathcal{Q}$ 28'17	0°59'38
conjunction	3031 May 26 18:09	5° $\Pi$ 33'43	-1°-51'-2	max. Earth dist.	3037 Aug 21 23:38	29° $\mathcal{Q}$ 29'32	10.16084 AU
minimum elong	3031 May 26 18:12	5° $\Pi$ 33'44	1°51'02		3037 Aug 25 22:34	0° $\mathcal{P}$	
max. Earth dist.	3031 May 26 21:16	5° $\Pi$ 34'43	10.20437 AU	morning rise	3037 Sep 08 18:43	1° $\mathcal{P}$ 45'40	
morning rise	3031 Jun 13 13:08	7° $\Pi$ 49'40		retrograde	3037 Dec 20 16:56	9° $\mathcal{P}$ 42'56	
retrograde	3031 Sep 28 06:49	16° $\Pi$ 02'04		opposition	3038 Feb 25 08:34	6° $\mathcal{P}$ 17'11	1°31'05
opposition	3031 Dec 05 10:28	12° $\Pi$ 33'09	-2°-6'-15	min. Earth dist.	3038 Feb 25 05:51	6° $\mathcal{P}$ 17'44	8.19463 AU
min. Earth dist.	3031 Dec 05 07:38	12° $\Pi$ 33'44	8.17189 AU	direct	3038 May 04 08:41	2° $\mathcal{P}$ 48'11	
direct	3032 Feb 10 00:21	9° $\Pi$ 07'45		evening set	3038 Aug 18 10:10	10° $\mathcal{P}$ 55'00	
evening set	3032 May 22 11:40	17° $\Pi$ 04'39					



conjunction	3038 Sep 05 08:21	13° $\mathring{M}$ 11'07	1°25'59	conjunction	3044 Nov 21 14:21	29° $\mathring{M}$ 29'55	1°59'10
minimum elong	3038 Sep 05 08:18	13° $\mathring{M}$ 11'06	1°25'59	minimum elong	3044 Nov 21 14:23	29° $\mathring{M}$ 29'56	1°59'11
max. Earth dist.	3038 Sep 05 11:17	13° $\mathring{M}$ 12'03	10.23238 AU	max. Earth dist.	3044 Nov 21 12:21	29° $\mathring{M}$ 29'19	10.81335 AU
morning rise	3038 Sep 23 03:13	15° $\mathring{M}$ 26'10			3044 Nov 25 18:13	0° $\mathring{A}$	
retrograde	3039 Jan 03 06:30	23° $\mathring{M}$ 15'49		morning rise	3044 Dec 08 09:24	1° $\mathring{A}$ 30'32	
opposition	3039 Mar 11 00:47	19° $\mathring{M}$ 51'14	2°00'35	retrograde	3045 Mar 17 23:23	8° $\mathring{A}$ 38'21	
min. Earth dist.	3039 Mar 10 22:54	19° $\mathring{M}$ 51'37	8.27503 AU	opposition	3045 May 25 22:02	5° $\mathring{A}$ 19'51	2°17'56
direct	3039 May 18 13:25	16° $\mathring{M}$ 22'30		min. Earth dist.	3045 May 25 23:32	5° $\mathring{A}$ 19'34	8.85476 AU
evening set	3039 Sep 01 18:46	24° $\mathring{M}$ 24'51		direct	3045 Aug 04 20:34	1° $\mathring{A}$ 56'56	
				evening set	3045 Nov 16 17:32	9° $\mathring{A}$ 17'25	
conjunction	3039 Sep 19 12:50	26° $\mathring{M}$ 38'29	1°47'10	conjunction	3045 Dec 03 13:58	11° $\mathring{A}$ 17'35	1°44'29
minimum elong	3039 Sep 19 12:47	26° $\mathring{M}$ 38'28	1°47'10	minimum elong	3045 Dec 03 14:00	11° $\mathring{A}$ 17'36	1°44'30
max. Earth dist.	3039 Sep 19 14:33	26° $\mathring{M}$ 39'02	10.31978 AU	max. Earth dist.	3045 Dec 03 11:37	11° $\mathring{A}$ 16'53	10.89046 AU
morning rise	3039 Oct 07 03:02	28° $\mathring{M}$ 50'54		morning rise	3045 Dec 20 07:17	13° $\mathring{A}$ 16'50	
	3039 Oct 16 13:50	0° $\mathring{A}$		retrograde	3046 Mar 29 22:02	20° $\mathring{A}$ 20'58	
retrograde	3040 Jan 16 12:18	6° $\mathring{A}$ 32'30		opposition	3046 Jun 07 07:03	17° $\mathring{A}$ 02'58	1°57'07
opposition	3040 Mar 23 12:28	3° $\mathring{A}$ 09'06	2°22'57	min. Earth dist.	3046 Jun 07 08:25	17° $\mathring{A}$ 02'43	8.92396 AU
min. Earth dist.	3040 Mar 23 10:54	3° $\mathring{A}$ 09'25	8.36874 AU	direct	3046 Aug 17 09:03	13° $\mathring{A}$ 41'13	
	3040 May 12 09:39	30° $\mathring{R}$ $\mathring{M}$		evening set	3046 Nov 28 13:23	20° $\mathring{A}$ 55'48	
direct	3040 May 31 14:23	29° $\mathring{M}$ 40'56					
	3040 Jun 19 17:50	0° $\mathring{A}$		conjunction	3046 Dec 15 08:09	22° $\mathring{A}$ 54'47	1°25'40
evening set	3040 Sep 14 18:21	7° $\mathring{A}$ 37'24		minimum elong	3046 Dec 15 08:11	22° $\mathring{A}$ 54'48	1°25'40
conjunction	3040 Oct 02 07:57	9° $\mathring{A}$ 48'21	2°02'17	max. Earth dist.	3046 Dec 15 06:05	22° $\mathring{A}$ 54'10	10.95163 AU
minimum elong	3040 Oct 02 07:55	9° $\mathring{A}$ 48'21	2°02'17	morning rise	3047 Jan 01 00:13	24° $\mathring{A}$ 53'02	
max. Earth dist.	3040 Oct 02 09:05	9° $\mathring{A}$ 48'43	10.41785 AU		3047 Feb 21 05:05	0° $\mathring{B}$	
morning rise	3040 Oct 19 17:17	11° $\mathring{A}$ 58'00		retrograde	3047 Apr 10 20:45	1° $\mathring{B}$ 54'51	
retrograde	3041 Jan 28 11:02	19° $\mathring{A}$ 31'36			3047 May 31 09:48	30° $\mathring{R}$ $\mathring{A}$	
opposition	3041 Apr 05 19:10	16° $\mathring{A}$ 09'21	2°37'22	opposition	3047 Jun 19 13:40	28° $\mathring{A}$ 37'10	1°31'49
min. Earth dist.	3041 Apr 05 17:38	16° $\mathring{A}$ 09'39	8.47037 AU	min. Earth dist.	3047 Jun 19 15:31	28° $\mathring{A}$ 36'50	8.97599 AU
direct	3041 Jun 14 09:54	12° $\mathring{A}$ 41'59		direct	3047 Aug 29 16:21	25° $\mathring{A}$ 16'27	
evening set	3041 Sep 28 08:06	20° $\mathring{A}$ 31'32			3047 Nov 18 05:44	0° $\mathring{B}$	
				evening set	3047 Dec 10 04:42	2° $\mathring{B}$ 26'10	
conjunction	3041 Oct 15 17:23	22° $\mathring{A}$ 39'51	2°10'54	conjunction	3047 Dec 26 22:07	4° $\mathring{B}$ 24'20	1°03'33
minimum elong	3041 Oct 15 17:21	22° $\mathring{A}$ 39'50	2°10'53	minimum elong	3047 Dec 26 22:09	4° $\mathring{B}$ 24'20	1°03'33
max. Earth dist.	3041 Oct 15 18:24	22° $\mathring{A}$ 40'10	10.52126 AU	max. Earth dist.	3047 Dec 26 19:24	4° $\mathring{B}$ 23'31	10.99466 AU
morning rise	3041 Nov 01 22:05	24° $\mathring{A}$ 46'47		morning rise	3048 Jan 12 13:38	6° $\mathring{B}$ 21'59	
	3041 Dec 21 08:12	0° $\mathring{M}$		retrograde	3048 Apr 21 17:36	13° $\mathring{B}$ 22'52	
retrograde	3042 Feb 10 05:15	2° $\mathring{M}$ 12'43		opposition	3048 Jun 30 18:59	10° $\mathring{B}$ 05'16	1°03'05
	3042 Apr 03 22:57	30° $\mathring{R}$ $\mathring{A}$		min. Earth dist.	3048 Jun 30 21:43	10° $\mathring{B}$ 04'46	9.00913 AU
opposition	3042 Apr 18 20:43	28° $\mathring{A}$ 51'34	2°43'40	direct	3048 Sep 09 18:06	6° $\mathring{B}$ 45'27	
min. Earth dist.	3042 Apr 18 19:37	28° $\mathring{A}$ 51'47	8.57462 AU	evening set	3048 Dec 20 16:53	13° $\mathring{B}$ 51'27	
direct	3042 Jun 27 21:18	25° $\mathring{A}$ 25'10					
	3042 Sep 13 23:52	0° $\mathring{M}$		conjunction	3049 Jan 06 09:19	15° $\mathring{B}$ 49'08	0°39'03
evening set	3042 Oct 11 11:52	3° $\mathring{M}$ 07'16		minimum elong	3049 Jan 06 09:20	15° $\mathring{B}$ 49'08	0°39'02
conjunction	3042 Oct 28 17:08	5° $\mathring{M}$ 13'06	2°13'00	max. Earth dist.	3049 Jan 06 05:35	15° $\mathring{B}$ 48'02	11.01809 AU
minimum elong	3042 Oct 28 17:08	5° $\mathring{M}$ 13'06	2°13'00	morning rise	3049 Jan 23 00:51	17° $\mathring{B}$ 46'33	
max. Earth dist.	3042 Oct 28 17:48	5° $\mathring{M}$ 13'18	10.62479 AU	retrograde	3049 May 03 14:10	24° $\mathring{B}$ 48'00	
morning rise	3042 Nov 14 17:48	7° $\mathring{M}$ 17'35		opposition	3049 Jul 12 23:32	21° $\mathring{B}$ 30'12	0°32'00
retrograde	3043 Feb 22 16:09	14° $\mathring{M}$ 36'28		min. Earth dist.	3049 Jul 13 02:46	21° $\mathring{B}$ 29'36	9.02223 AU
opposition	3043 May 01 17:29	11° $\mathring{M}$ 16'21	2°42'05	direct	3049 Sep 21 20:07	18° $\mathring{B}$ 11'04	
min. Earth dist.	3043 May 01 17:31	11° $\mathring{M}$ 16'20	8.67637 AU	evening set	3050 Jan 01 03:38	25° $\mathring{B}$ 14'41	
direct	3043 Jul 11 02:51	7° $\mathring{M}$ 51'03					
	3043 Oct 20 15:35	15° $\mathring{M}$		conjunction	3050 Jan 17 19:35	27° $\mathring{B}$ 12'13	0°13'04
evening set	3043 Oct 24 06:11	15° $\mathring{M}$ 25'36		minimum elong	3050 Jan 17 19:36	27° $\mathring{B}$ 12'13	0°13'04
conjunction	3043 Nov 10 07:49	17° $\mathring{M}$ 29'11	2°08'55	behind sun begin	3050 Jan 17 15:18	27° $\mathring{B}$ 10'58	
minimum elong	3043 Nov 10 07:50	17° $\mathring{M}$ 29'11	2°08'55	behind sun end	3050 Jan 17 23:53	27° $\mathring{B}$ 13'29	
max. Earth dist.	3043 Nov 10 07:15	17° $\mathring{M}$ 29'01	10.72355 AU	max. Earth dist.	3050 Jan 17 15:49	27° $\mathring{B}$ 11'07	11.02103 AU
morning rise	3043 Nov 27 05:14	19° $\mathring{M}$ 31'33		morning rise	3050 Feb 03 11:22	29° $\mathring{B}$ 09'43	
retrograde	3044 Mar 05 21:22	26° $\mathring{M}$ 44'20			3050 Feb 10 19:05	0° $\mathring{B}$	
opposition	3044 May 13 09:45	23° $\mathring{M}$ 25'07	2°33'14	retrograde	3050 May 15 14:21	6° $\mathring{B}$ 13'11	
min. Earth dist.	3044 May 13 10:55	23° $\mathring{M}$ 24'54	8.77107 AU	desc. node	3050 Jul 21 14:00	3° $\mathring{B}$ 10'48	
direct	3044 Jul 23 03:01	20° $\mathring{M}$ 00'59		opposition	3050 Jul 25 04:04	2° $\mathring{B}$ 54'56	0°00'18
evening set	3044 Nov 04 15:43	27° $\mathring{M}$ 28'15		min. Earth dist.	3050 Jul 25 06:48	2° $\mathring{B}$ 54'26	9.01470 AU
					3050 Sep 11 13:16	30° $\mathring{R}$ $\mathring{B}$	
				direct	3050 Oct 03 19:35	29° $\mathring{B}$ 36'18	



	3050 Oct 25 17:48	0°♊		opposition	3056 Oct 06 12:50	14°♊02'28	-2°-35'-10
evening set	3051 Jan 12 14:29	6°♊38'52		min. Earth dist.	3056 Oct 06 14:00	14°♊02'15	8.58799 AU
				direct	3056 Dec 13 13:57	10°♊41'48	
conjunction	3051 Jan 29 06:19	8°♊36'35	0°-13'-33	evening set	3057 Mar 23 18:08	18°♊06'34	
minimum elong	3051 Jan 29 06:18	8°♊36'34	0°13'33				
behind sun begin	3051 Jan 29 02:19	8°♊35'24		conjunction	3057 Apr 09 18:07	20°♊12'25	-2°-9'-40
behind sun end	3051 Jan 29 10:17	8°♊37'45		minimum elong	3057 Apr 09 18:06	20°♊12'24	2°09'41
max. Earth dist.	3051 Jan 29 03:17	8°♊35'41	11.00322 AU	max. Earth dist.	3057 Apr 09 15:54	20°♊11'43	10.53319 AU
morning rise	3051 Feb 14 22:33	10°♊34'29		morning rise	3057 Apr 26 22:32	22°♊19'38	
	3051 Mar 29 16:14	15°♊			3057 Jul 28 01:02	0°♊	
retrograde	3051 May 27 16:41	17°♊41'24		retrograde	3057 Aug 10 22:41	0°♊09'50	
	3051 Jul 28 21:59	15°♊			3057 Aug 24 20:32	30°♊	
opposition	3051 Aug 06 09:57	14°♊22'27	0°-32'-44	opposition	3057 Oct 19 17:21	26°♊43'32	-2°-43'-10
min. Earth dist.	3051 Aug 06 12:19	14°♊22'01	8.98664 AU	min. Earth dist.	3057 Oct 19 18:18	26°♊43'21	8.48061 AU
direct	3051 Oct 15 16:51	11°♊04'06		direct	3057 Dec 26 07:53	23°♊21'47	
	3051 Dec 26 13:58	15°♊			3058 Mar 29 10:26	0°♊	
evening set	3052 Jan 24 02:52	18°♊06'59		evening set	3058 Apr 05 19:43	0°♊53'48	
conjunction	3052 Feb 09 18:45	20°♊05'12	0°-39'-41	conjunction	3058 Apr 22 23:18	3°♊02'05	-2°-12'-43
minimum elong	3052 Feb 09 18:44	20°♊05'11	0°39'41	minimum elong	3058 Apr 22 23:18	3°♊02'05	2°12'44
max. Earth dist.	3052 Feb 09 15:29	20°♊04'14	10.96505 AU	max. Earth dist.	3058 Apr 22 21:50	3°♊01'37	10.42617 AU
morning rise	3052 Feb 26 11:55	22°♊03'50		morning rise	3058 May 10 07:36	5°♊11'49	
retrograde	3052 Jun 07 23:42	29°♊15'35		retrograde	3058 Aug 24 18:02	13°♊10'01	
opposition	3052 Aug 17 17:53	25°♊55'43	-1°-4'-8	opposition	3058 Nov 02 02:54	9°♊42'31	-2°-43'-8
min. Earth dist.	3052 Aug 17 20:38	25°♊55'13	8.93872 AU	min. Earth dist.	3058 Nov 02 03:23	9°♊42'26	8.37549 AU
direct	3052 Oct 26 15:46	22°♊37'21		direct	3059 Jan 08 08:12	6°♊19'35	
evening set	3053 Feb 03 18:27	29°♊42'01		evening set	3059 Apr 19 06:22	13°♊59'09	
	3053 Feb 06 07:39	0°♊			3059 Apr 27 08:57	15°♊	
conjunction	3053 Feb 20 10:44	1°♊41'03	-1°-4'-28	conjunction	3059 May 06 14:19	16°♊10'02	-2°-9'00
minimum elong	3053 Feb 20 10:42	1°♊41'02	1°04'28	minimum elong	3059 May 06 14:21	16°♊10'03	2°09'01
max. Earth dist.	3053 Feb 20 06:29	1°♊39'47	10.90740 AU	max. Earth dist.	3059 May 06 14:18	16°♊10'02	10.32426 AU
morning rise	3053 Mar 09 05:19	3°♊40'46		morning rise	3059 May 24 02:54	18°♊22'24	
retrograde	3053 Jun 20 10:14	10°♊58'34		retrograde	3059 Sep 07 18:57	26°♊27'34	
opposition	3053 Aug 30 04:27	7°♊37'37	-1°-33'-19	opposition	3059 Nov 15 17:08	22°♊59'04	-2°-34'-28
min. Earth dist.	3053 Aug 30 07:54	7°♊36'58	8.87199 AU	min. Earth dist.	3059 Nov 15 16:41	22°♊59'10	8.27808 AU
direct	3053 Nov 07 15:32	4°♊18'59		direct	3060 Jan 21 15:22	19°♊34'54	
evening set	3054 Feb 15 14:26	11°♊26'54		evening set	3060 May 02 02:06	27°♊21'58	
conjunction	3054 Mar 04 07:46	13°♊27'07	-1°-26'-51	conjunction	3060 May 19 14:55	29°♊35'30	-1°-58'-17
minimum elong	3054 Mar 04 07:44	13°♊27'07	1°26'52	minimum elong	3060 May 19 14:58	29°♊35'31	1°58'18
max. Earth dist.	3054 Mar 04 03:42	13°♊25'54	10.83171 AU	max. Earth dist.	3060 May 19 16:40	29°♊36'04	10.23276 AU
morning rise	3054 Mar 21 04:01	15°♊28'14			3060 May 22 19:32	0°♊	
retrograde	3054 Jul 03 02:18	22°♊53'19		morning rise	3060 Jun 06 07:53	1°♊50'24	
opposition	3054 Sep 11 18:45	19°♊31'07	-1°-59'-3	retrograde	3060 Sep 21 00:35	10°♊01'03	
min. Earth dist.	3054 Sep 11 21:46	19°♊30'33	8.78856 AU	opposition	3060 Nov 28 11:36	6°♊31'50	-2°-17'-5
direct	3054 Nov 19 19:42	16°♊12'01		min. Earth dist.	3060 Nov 28 09:49	6°♊32'12	8.19348 AU
evening set	3055 Feb 27 16:10	23°♊24'30		direct	3061 Feb 03 05:04	3°♊06'26	
				evening set	3061 May 16 06:34	11°♊00'35	
conjunction	3055 Mar 16 11:08	25°♊26'17	-1°-45'-51	conjunction	3061 Jun 03 00:10	13°♊16'36	-1°-40'-47
minimum elong	3055 Mar 16 11:05	25°♊26'16	1°45'52	minimum elong	3061 Jun 03 00:13	13°♊16'37	1°40'47
max. Earth dist.	3055 Mar 16 08:06	25°♊25'22	10.74104 AU	max. Earth dist.	3061 Jun 03 03:10	13°♊17'34	10.15663 AU
morning rise	3055 Apr 02 09:26	27°♊29'07		morning rise	3061 Jun 20 21:17	15°♊33'47	
	3055 Apr 24 09:39	0°♊		retrograde	3061 Oct 05 09:49	23°♊48'01	
retrograde	3055 Jul 16 03:11	5°♊02'20		opposition	3061 Dec 12 09:27	20°♊18'24	-1°-51'-33
opposition	3055 Sep 24 13:27	1°♊38'46	-2°-20'-5	min. Earth dist.	3061 Dec 12 06:41	20°♊18'58	8.12652 AU
min. Earth dist.	3055 Sep 24 15:25	1°♊38'24	8.69231 AU	direct	3062 Feb 16 23:56	16°♊51'50	
	3055 Oct 17 02:19	30°♊		evening set	3062 May 30 18:37	24°♊52'13	
direct	3055 Dec 02 02:53	28°♊19'01					
	3056 Jan 15 14:27	0°♊					
evening set	3056 Mar 11 01:08	5°♊37'09		conjunction	3062 Jun 17 16:32	27°♊10'19	-1°-17'-13
				minimum elong	3062 Jun 17 16:36	27°♊10'20	1°17'14
conjunction	3056 Mar 27 22:17	7°♊40'49	-2°00'-26	max. Earth dist.	3062 Jun 17 20:11	27°♊11'30	10.10043 AU
minimum elong	3056 Mar 27 22:15	7°♊40'48	2°00'28	morning rise	3062 Jul 05 17:13	29°♊29'19	
max. Earth dist.	3056 Mar 27 20:01	7°♊40'07	10.63987 AU		3062 Jul 09 18:41	0°♊	
morning rise	3056 Apr 13 23:18	9°♊45'43		retrograde	3062 Oct 19 21:26	7°♊44'59	
retrograde	3056 Jul 28 09:54	17°♊27'26		opposition	3062 Dec 26 09:52	4°♊15'20	-1°-19'-6



min. Earth dist.	3062 Dec 26 06:43	4°☾15'59	8.08134 AU	minimum elong	3068 Sep 12 12:57	20°♊50'28	1°38'10
direct	3063 Mar 02 23:26	0°☾47'42		max. Earth dist.	3068 Sep 12 17:16	20°♊51'50	10.27206 AU
evening set	3063 Jun 14 12:44	8°☾53'10		morning rise	3068 Sep 30 05:21	23°♊04'15	
					3068 Dec 10 15:48	0°♊	
conjunction	3063 Jul 02 14:05	11°☾12'44	0°-48'-53	retrograde	3069 Jan 09 23:59	0°♊50'10	
minimum elong	3063 Jul 02 14:07	11°☾12'45	0°48'54		3069 Feb 09 15:00	30°♋	
max. Earth dist.	3063 Jul 02 17:56	11°☾13'59	10.06760 AU	opposition	3069 Mar 17 20:25	27°♋26'17	2°13'39
morning rise	3063 Jul 20 17:14	13°☾32'54		min. Earth dist.	3069 Mar 17 17:11	27°♋26'55	8.32009 AU
retrograde	3063 Nov 03 08:32	21°☾47'45		direct	3069 May 25 15:03	23°♋58'01	
opposition	3064 Jan 09 11:36	18°☾18'25	0°-41'-39		3069 Aug 23 11:32	0°♊	
min. Earth dist.	3064 Jan 09 08:27	18°☾19'04	8.06078 AU	evening set	3069 Sep 08 21:08	1°♊57'49	
direct	3064 Mar 16 05:00	14°☾49'55					
evening set	3064 Jun 28 11:01	22°☾58'58		conjunction	3069 Sep 26 12:58	4°♊10'08	1°56'07
				minimum elong	3069 Sep 26 12:55	4°♊10'07	1°56'07
conjunction	3064 Jul 16 14:23	25°☾19'14	0°-17'-31	max. Earth dist.	3069 Sep 26 16:32	4°♊11'15	10.36938 AU
minimum elong	3064 Jul 16 14:24	25°☾19'14	0°17'32	morning rise	3069 Oct 14 00:26	6°♊21'08	
max. Earth dist.	3064 Jul 16 18:07	25°☾20'26	10.06018 AU	retrograde	3070 Jan 23 03:10	13°♊58'56	
morning rise	3064 Aug 03 18:26	27°☾39'41		opposition	3070 Mar 31 06:05	10°♊36'25	2°31'43
	3064 Aug 22 19:13	0°♊		min. Earth dist.	3070 Mar 31 04:01	10°♊36'50	8.42237 AU
retrograde	3064 Nov 16 16:05	5°♊51'37		direct	3070 Jun 08 12:57	7°♊09'00	
opposition	3065 Jan 22 13:13	2°♊22'57	0°-1'-38	evening set	3070 Sep 22 16:17	15°♊02'16	
min. Earth dist.	3065 Jan 22 10:10	2°♊23'35	8.06626 AU				
asc. node	3065 Feb 06 23:15	1°♊08'17		conjunction	3070 Oct 10 03:31	17°♊11'52	2°07'41
	3065 Feb 23 10:13	30°♋		minimum elong	3070 Oct 10 03:30	17°♊11'51	2°07'41
direct	3065 Mar 30 13:38	28°☾53'52		max. Earth dist.	3070 Oct 10 05:29	17°♊12'28	10.47459 AU
	3065 May 04 11:32	0°♊		morning rise	3070 Oct 27 10:20	19°♊20'06	
evening set	3065 Jul 13 10:47	7°♊04'46		retrograde	3071 Feb 04 23:53	26°♊49'53	
				opposition	3071 Apr 13 10:32	23°♊28'39	2°41'38
conjunction	3065 Jul 31 14:35	9°♊24'50	0°14'54	min. Earth dist.	3071 Apr 13 09:23	23°♊28'52	8.52961 AU
minimum elong	3065 Jul 31 14:34	9°♊24'50	0°14'54	direct	3071 Jun 22 04:44	20°♊02'13	
behind sun begin	3065 Jul 31 12:06	9°♊24'02		evening set	3071 Oct 06 01:28	27°♊48'10	
behind sun end	3065 Jul 31 17:02	9°♊25'37					
max. Earth dist.	3065 Jul 31 18:21	9°♊26'03	10.07877 AU	conjunction	3071 Oct 23 08:23	29°♊55'08	2°12'41
morning rise	3065 Aug 18 17:48	11°♊44'42		minimum elong	3071 Oct 23 08:22	29°♊55'08	2°12'41
	3065 Sep 14 19:46	15°♊		max. Earth dist.	3071 Oct 23 08:56	29°♊55'18	10.58196 AU
retrograde	3065 Nov 30 19:46	19°♊51'55			3071 Oct 24 00:11	0°♋	
opposition	3066 Feb 05 13:39	16°♊24'11	0°38'18	morning rise	3071 Nov 09 10:57	2°♋00'45	
min. Earth dist.	3066 Feb 05 10:12	16°♊24'53	8.09759 AU	retrograde	3072 Feb 17 13:02	9°♋23'02	
	3066 Feb 23 02:56	15°♋		opposition	3072 Apr 25 10:03	6°♋02'55	2°43'31
direct	3066 Apr 13 23:08	12°♊54'50		min. Earth dist.	3072 Apr 25 09:22	6°♋03'03	8.63596 AU
	3066 Jun 01 22:25	15°♊		direct	3072 Jul 04 15:14	2°♋37'36	
evening set	3066 Jul 28 09:13	21°♊05'39		evening set	3072 Oct 18 00:30	10°♋15'50	
conjunction	3066 Aug 15 11:52	23°♊24'41	0°46'12	conjunction	3072 Nov 04 03:40	12°♋20'23	2°11'18
minimum elong	3066 Aug 15 11:50	23°♊24'40	0°46'12	minimum elong	3072 Nov 04 03:40	12°♋20'23	2°11'18
max. Earth dist.	3066 Aug 15 16:00	23°♊26'01	10.12232 AU	max. Earth dist.	3072 Nov 04 03:28	12°♋20'19	10.68570 AU
morning rise	3066 Sep 02 12:40	25°♊43'07		morning rise	3072 Nov 21 02:35	14°♋23'41	
	3066 Oct 09 09:16	0°♋			3072 Nov 26 05:08	15°♋	
retrograde	3066 Dec 14 18:54	3°♋44'11		retrograde	3073 Feb 28 21:42	21°♋39'20	
opposition	3067 Feb 19 11:35	0°♋17'36	1°15'34	opposition	3073 May 08 04:46	18°♋20'10	2°37'48
min. Earth dist.	3067 Feb 19 07:45	0°♋18'23	8.15281 AU	min. Earth dist.	3073 May 08 04:34	18°♋20'12	8.73569 AU
	3067 Feb 23 01:44	30°♋			3073 Jul 08 17:57	15°♋	
direct	3067 Apr 28 06:55	26°♊48'19		direct	3073 Jul 17 19:02	14°♋55'59	
	3067 Jun 29 06:52	0°♋			3073 Jul 26 18:24	15°♋	
evening set	3067 Aug 12 04:05	4°♋57'10		evening set	3073 Oct 30 14:22	22°♋26'38	
conjunction	3067 Aug 30 04:06	7°♋14'27	1°14'30	conjunction	3073 Nov 16 14:26	24°♋29'09	2°03'59
minimum elong	3067 Aug 30 04:03	7°♋14'26	1°14'29	minimum elong	3073 Nov 16 14:28	24°♋29'09	2°03'59
max. Earth dist.	3067 Aug 30 08:25	7°♋15'50	10.18808 AU	max. Earth dist.	3073 Nov 16 13:40	24°♋28'55	10.78022 AU
morning rise	3067 Sep 17 01:05	9°♋30'47		morning rise	3073 Dec 03 10:25	26°♋30'29	
retrograde	3067 Dec 28 13:21	17°♋24'35			3074 Jan 04 03:37	0°♌	
opposition	3068 Mar 04 06:00	13°♋59'18	1°47'55	retrograde	3074 Mar 13 03:12	3°♌40'36	
min. Earth dist.	3068 Mar 04 02:10	14°♋00'05	8.22848 AU	opposition	3074 May 20 19:06	0°♌22'13	2°25'14
direct	3068 May 11 12:27	10°♋30'23		min. Earth dist.	3074 May 20 20:22	0°♌21'58	8.82373 AU
evening set	3068 Aug 25 16:46	18°♋35'31			3074 May 25 16:37	30°♋	
				direct	3074 Jul 30 14:38	26°♋59'10	
conjunction	3068 Sep 12 13:00	20°♋50'29	1°38'11		3074 Oct 01 10:26	0°♌	



evening set	3074 Nov 11 20:14	4°♂22'51		evening set	3081 Jan 18 13:27	13°♂26'02	
					3081 Jan 31 20:01	15°♂	
conjunction	3074 Nov 28 17:42	6°♂23'41	1°51'23	conjunction	3081 Feb 04 05:19	15°♂24'12	0°-28'-37
minimum elong	3074 Nov 28 17:44	6°♂23'42	1°51'23	minimum elong	3081 Feb 04 05:18	15°♂24'12	0°28'37
max. Earth dist.	3074 Nov 28 15:23	6°♂23'00	10.86120 AU	max. Earth dist.	3081 Feb 04 00:39	15°♂22'49	10.96211 AU
morning rise	3074 Dec 15 11:37	8°♂23'32		morning rise	3081 Feb 20 22:18	17°♂22'43	
retrograde	3075 Mar 25 03:03	15°♂29'25		retrograde	3081 Jun 03 01:11	24°♂32'57	
opposition	3075 Jun 02 06:10	12°♂11'35	2°06'43	opposition	3081 Aug 12 19:53	21°♂12'53	0°-50'-57
min. Earth dist.	3075 Jun 02 08:56	12°♂11'04	8.89668 AU	min. Earth dist.	3081 Aug 12 23:24	21°♂12'14	8.93870 AU
direct	3075 Aug 12 05:10	8°♂49'36		direct	3081 Oct 21 23:23	17°♂53'50	
evening set	3075 Nov 23 19:21	16°♂07'07		evening set	3082 Jan 30 03:43	24°♂58'25	
conjunction	3075 Dec 10 14:43	18°♂06'38	1°34'15	conjunction	3082 Feb 15 20:00	26°♂57'19	0°-54'-8
minimum elong	3075 Dec 10 14:45	18°♂06'39	1°34'16	minimum elong	3082 Feb 15 19:58	26°♂57'19	0°54'09
max. Earth dist.	3075 Dec 10 10:46	18°♂05'27	10.92603 AU	max. Earth dist.	3082 Feb 15 16:24	26°♂56'14	10.91063 AU
morning rise	3075 Dec 27 07:21	20°♂05'22		morning rise	3082 Mar 04 13:57	28°♂56'46	
retrograde	3076 Apr 05 01:19	27°♂08'25			3082 Mar 13 17:13	0°♂	
opposition	3076 Jun 13 14:31	23°♂50'52	1°43'14	retrograde	3082 Jun 15 10:41	6°♂12'38	
min. Earth dist.	3076 Jun 13 18:02	23°♂50'12	8.95249 AU	opposition	3082 Aug 25 05:27	2°♂51'30	-1°-21'-18
direct	3076 Aug 23 16:27	20°♂29'49		min. Earth dist.	3082 Aug 25 07:58	2°♂51'01	8.87867 AU
evening set	3076 Dec 04 13:06	27°♂42'03			3082 Oct 10 05:48	30°♂	
conjunction	3076 Dec 21 07:02	29°♂40'38	1°13'27	direct	3082 Nov 02 22:12	29°♂32'20	
minimum elong	3076 Dec 21 07:04	29°♂40'39	1°13'27		3082 Nov 26 06:58	0°♂	
max. Earth dist.	3076 Dec 21 02:34	29°♂39'19	10.97297 AU	evening set	3083 Feb 10 21:56	6°♂39'33	
	3076 Dec 24 00:10	0°♂		conjunction	3083 Feb 27 14:56	8°♂39'29	-1°-17'-43
morning rise	3077 Jan 06 22:54	1°♂38'38		minimum elong	3083 Feb 27 14:54	8°♂39'28	1°17'44
retrograde	3077 Apr 16 22:58	8°♂40'13		max. Earth dist.	3083 Feb 27 11:45	8°♂38'32	10.84227 AU
opposition	3077 Jun 25 20:44	5°♂22'38	1°15'51	morning rise	3083 Mar 16 10:21	10°♂40'12	
min. Earth dist.	3077 Jun 26 00:01	5°♂22'02	8.98961 AU	retrograde	3083 Jun 28 01:37	18°♂02'53	
direct	3077 Sep 04 22:18	2°♂02'22		opposition	3083 Sep 06 18:33	14°♂40'34	-1°-48'-43
evening set	3077 Dec 16 02:57	9°♂10'25		min. Earth dist.	3083 Sep 06 20:40	14°♂40'10	8.80306 AU
conjunction	3078 Jan 01 20:00	11°♂08'26	0°49'51	direct	3083 Nov 15 00:05	11°♂21'05	
minimum elong	3078 Jan 01 20:02	11°♂08'26	0°49'50	evening set	3084 Feb 22 21:21	18°♂32'15	
max. Earth dist.	3078 Jan 01 16:00	11°♂07'14	11.00052 AU	conjunction	3084 Mar 10 15:31	20°♂33'34	-1°-38'-18
morning rise	3078 Jan 18 11:30	13°♂06'03		minimum elong	3084 Mar 10 15:29	20°♂33'33	1°38'20
retrograde	3078 Apr 28 21:10	20°♂07'36		max. Earth dist.	3084 Mar 10 12:12	20°♂32'33	10.75968 AU
opposition	3078 Jul 08 01:56	16°♂49'44	0°45'38	morning rise	3084 Mar 27 13:01	22°♂35'52	
min. Earth dist.	3078 Jul 08 05:13	16°♂49'08	9.00684 AU		3084 Jun 28 16:57	0°♂	
direct	3078 Sep 17 00:56	13°♂30'04		retrograde	3084 Jul 09 23:23	0°♂06'16	
evening set	3078 Dec 27 14:39	20°♂35'10			3084 Jul 21 05:00	30°♂	
conjunction	3079 Jan 13 06:58	22°♂32'55	0°24'22	opposition	3084 Sep 18 11:42	26°♂42'43	-2°-11'-56
minimum elong	3079 Jan 13 06:59	22°♂32'55	0°24'21	min. Earth dist.	3084 Sep 18 13:48	26°♂42'19	8.71477 AU
max. Earth dist.	3079 Jan 13 02:45	22°♂31'40	11.00779 AU	direct	3084 Nov 26 05:16	23°♂22'43	
morning rise	3079 Jan 29 22:32	24°♂30'29			3085 Feb 28 15:59	0°♂	
	3079 Mar 27 16:05	0°♂		evening set	3085 Mar 06 03:24	0°♂39'04	
retrograde	3079 May 10 20:08	1°♂33'28		conjunction	3085 Mar 22 23:28	2°♂42'04	-1°-54'-54
	3079 Jun 25 08:42	30°♂		minimum elong	3085 Mar 22 23:26	2°♂42'04	1°54'55
opposition	3079 Jul 20 06:58	28°♂15'06	0°13'40	max. Earth dist.	3085 Mar 22 20:46	2°♂41'15	10.66611 AU
min. Earth dist.	3079 Jul 20 10:51	28°♂14'23	9.00382 AU	morning rise	3085 Apr 08 23:27	4°♂46'17	
direct	3079 Sep 29 00:16	24°♂55'49		retrograde	3085 Jul 23 01:41	12°♂24'57	
	3079 Dec 21 08:01	0°♂		opposition	3085 Oct 01 09:15	9°♂00'10	-2°-29'-41
desc. node	3079 Dec 25 16:06	0°♂28'16		min. Earth dist.	3085 Oct 01 10:49	8°♂59'52	8.61744 AU
evening set	3080 Jan 08 01:41	1°♂59'20		direct	3085 Dec 08 15:27	5°♂39'29	
conjunction	3080 Jan 24 17:31	3°♂57'07	0°-2'-10	evening set	3086 Mar 18 17:01	13°♂02'02	
minimum elong	3080 Jan 24 17:31	3°♂57'07	0°02'11	conjunction	3086 Apr 04 15:46	15°♂07'04	-2°-6'-30
behind sun begin	3080 Jan 24 10:33	3°♂55'04		minimum elong	3086 Apr 04 15:44	15°♂07'04	2°06'31
behind sun end	3080 Jan 25 00:30	3°♂59'10		max. Earth dist.	3086 Apr 04 14:46	15°♂06'46	10.56558 AU
max. Earth dist.	3080 Jan 24 12:26	3°♂55'39	10.99482 AU	morning rise	3086 Apr 21 18:40	17°♂13'26	
morning rise	3080 Feb 10 09:41	5°♂55'01		retrograde	3086 Aug 05 12:02	25°♂00'38	
retrograde	3080 May 21 19:55	13°♂00'54		opposition	3086 Oct 14 11:54	21°♂34'38	-2°-40'-46
opposition	3080 Jul 31 12:42	9°♂41'46	0°-18'-54	min. Earth dist.	3086 Oct 14 12:04	21°♂34'36	8.51540 AU
min. Earth dist.	3080 Jul 31 16:54	9°♂40'59	8.98088 AU	direct	3086 Dec 21 07:54	18°♂13'11	
direct	3080 Oct 09 23:04	6°♂22'41					



evening set	3087 Mar 31 15:01	25° $\Upsilon$ 42'36		opposition	3093 Jan 02 23:40	12° $\Theta$ 41'21	0°-57'-37
				min. Earth dist.	3093 Jan 02 20:12	12° $\Theta$ 42'04	8.08162 AU
conjunction	3087 Apr 17 17:08	27° $\Upsilon$ 49'57	-2°-12'-14	direct	3093 Mar 10 15:42	9° $\Theta$ 13'48	
minimum elong	3087 Apr 17 17:08	27° $\Upsilon$ 49'57	2°12'14	evening set	3093 Jun 22 13:52	17° $\Theta$ 20'58	
max. Earth dist.	3087 Apr 17 17:41	27° $\Upsilon$ 50'08	10.46283 AU				
morning rise	3087 May 04 23:35	29° $\Upsilon$ 58'43		conjunction	3093 Jul 10 16:34	19° $\Theta$ 40'51	0°-30'-47
	3087 May 05 03:47	0° $\mathcal{B}$		minimum elong	3093 Jul 10 16:35	19° $\Theta$ 40'52	0°30'48
retrograde	3087 Aug 19 06:36	7° $\mathcal{B}$ 54'09		max. Earth dist.	3093 Jul 10 21:08	19° $\Theta$ 42'20	10.07534 AU
opposition	3087 Oct 27 19:42	4° $\mathcal{B}$ 27'04	-2°-44'-10	morning rise	3093 Jul 28 20:13	22° $\Theta$ 01'05	
min. Earth dist.	3087 Oct 27 18:32	4° $\mathcal{B}$ 27'18	8.41357 AU		3093 Oct 26 03:56	0° $\mathcal{Q}$	
direct	3088 Jan 03 04:40	1° $\mathcal{B}$ 04'42		retrograde	3093 Nov 11 01:44	0° $\mathcal{Q}$ 14'04	
evening set	3088 Apr 12 22:18	8° $\mathcal{B}$ 41'28			3093 Nov 27 00:03	30° $\mathcal{R}\Theta$	
				opposition	3094 Jan 17 01:25	26° $\Theta$ 45'38	0°-18'-23
conjunction	3088 Apr 30 04:24	10° $\mathcal{B}$ 51'20	-2°-11'-22	min. Earth dist.	3094 Jan 16 21:44	26° $\Theta$ 46'24	8.07528 AU
minimum elong	3088 Apr 30 04:25	10° $\mathcal{B}$ 51'20	2°11'23	direct	3094 Mar 24 22:22	23° $\Theta$ 17'22	
max. Earth dist.	3088 Apr 30 05:46	10° $\mathcal{B}$ 51'46	10.36304 AU		3094 Jun 25 21:02	0° $\mathcal{Q}$	
morning rise	3088 May 17 15:00	13° $\mathcal{B}$ 02'39		evening set	3094 Jul 07 13:15	1° $\mathcal{Q}$ 27'12	
	3088 Jun 02 21:06	15° $\mathcal{B}$		asc. node	3094 Jul 09 00:37	1° $\mathcal{Q}$ 38'25	
retrograde	3088 Sep 01 07:15	21° $\mathcal{B}$ 05'25					
opposition	3088 Nov 09 08:21	17° $\mathcal{B}$ 37'28	-2°-39'-6	conjunction	3094 Jul 25 17:06	3° $\mathcal{Q}$ 47'18	0°01'28
min. Earth dist.	3088 Nov 09 06:32	17° $\mathcal{B}$ 37'50	8.31722 AU	minimum elong	3094 Jul 25 17:06	3° $\mathcal{Q}$ 47'18	0°01'28
	3088 Dec 17 00:42	15° $\mathcal{R}\mathcal{B}$		behind sun begin	3094 Jul 25 09:44	3° $\mathcal{Q}$ 44'57	
direct	3089 Jan 15 07:37	14° $\mathcal{B}$ 14'04		behind sun end	3094 Jul 26 00:28	3° $\mathcal{Q}$ 49'40	
	3089 Feb 13 07:57	15° $\mathcal{B}$		max. Earth dist.	3094 Jul 25 21:37	3° $\mathcal{Q}$ 48'44	10.08117 AU
evening set	3089 Apr 26 14:47	21° $\mathcal{B}$ 58'19		morning rise	3094 Aug 12 20:39	6° $\mathcal{Q}$ 07'21	
				retrograde	3094 Nov 25 08:19	14° $\mathcal{Q}$ 16'30	
conjunction	3089 May 14 01:22	24° $\mathcal{B}$ 10'46	-2°-3'-33	opposition	3095 Jan 31 02:28	10° $\mathcal{Q}$ 48'50	0°21'52
minimum elong	3089 May 14 01:25	24° $\mathcal{B}$ 10'46	2°03'34	min. Earth dist.	3095 Jan 30 23:02	10° $\mathcal{Q}$ 49'32	8.09323 AU
max. Earth dist.	3089 May 14 03:15	24° $\mathcal{B}$ 11'21	10.27154 AU	direct	3095 Apr 08 06:32	7° $\mathcal{Q}$ 20'04	
morning rise	3089 May 31 16:28	26° $\mathcal{B}$ 24'38			3095 Jul 18 10:45	15° $\mathcal{Q}$	
	3089 Jul 01 07:07	0° $\mathcal{I}$		evening set	3095 Jul 22 12:50	15° $\mathcal{Q}$ 30'48	
retrograde	3089 Sep 15 11:14	4° $\mathcal{I}$ 33'24					
opposition	3089 Nov 23 01:40	1° $\mathcal{I}$ 04'48	-2°-25'-17	conjunction	3095 Aug 09 16:09	17° $\mathcal{Q}$ 50'17	0°33'27
min. Earth dist.	3089 Nov 22 23:32	1° $\mathcal{I}$ 05'14	8.23160 AU	minimum elong	3095 Aug 09 16:07	17° $\mathcal{Q}$ 50'16	0°33'26
	3089 Dec 06 16:54	30° $\mathcal{R}\mathcal{B}$		max. Earth dist.	3095 Aug 09 20:04	17° $\mathcal{Q}$ 51'32	10.11130 AU
direct	3090 Jan 28 19:23	27° $\mathcal{B}$ 40'20		morning rise	3095 Aug 27 17:58	20° $\mathcal{Q}$ 09'17	
	3090 Mar 21 04:36	0° $\mathcal{I}$		retrograde	3095 Dec 09 10:33	28° $\mathcal{Q}$ 12'56	
evening set	3090 May 10 15:58	5° $\mathcal{I}$ 31'42		opposition	3096 Feb 14 01:44	24° $\mathcal{Q}$ 46'14	1°00'32
				min. Earth dist.	3096 Feb 13 22:57	24° $\mathcal{Q}$ 46'48	8.13527 AU
conjunction	3090 May 28 07:19	7° $\mathcal{I}$ 46'39	-1°-48'-48	direct	3096 Apr 21 15:06	21° $\mathcal{Q}$ 17'13	
minimum elong	3090 May 28 07:22	7° $\mathcal{I}$ 46'40	1°48'48	evening set	3096 Aug 05 09:46	29° $\mathcal{Q}$ 26'56	
max. Earth dist.	3090 May 28 09:58	7° $\mathcal{I}$ 47'30	10.19339 AU		3096 Aug 09 18:33	0° $\mathcal{M}$	
morning rise	3090 Jun 15 02:48	10° $\mathcal{I}$ 02'53					
retrograde	3090 Sep 29 19:00	18° $\mathcal{I}$ 15'52		conjunction	3096 Aug 23 10:53	1° $\mathcal{M}$ 44'57	1°03'12
opposition	3090 Dec 06 22:46	14° $\mathcal{I}$ 46'53	-2°-3'00	minimum elong	3096 Aug 23 10:50	1° $\mathcal{M}$ 44'56	1°03'12
min. Earth dist.	3090 Dec 06 20:18	14° $\mathcal{I}$ 47'24	8.16156 AU	max. Earth dist.	3096 Aug 23 13:57	1° $\mathcal{M}$ 45'56	10.16446 AU
direct	3091 Feb 11 13:15	11° $\mathcal{I}$ 21'20		morning rise	3096 Sep 10 09:32	4° $\mathcal{M}$ 02'10	
evening set	3091 May 25 01:15	19° $\mathcal{I}$ 19'04		retrograde	3096 Dec 22 06:45	11° $\mathcal{M}$ 59'02	
				opposition	3097 Feb 26 21:56	8° $\mathcal{M}$ 33'26	1°35'11
conjunction	3091 Jun 11 21:16	21° $\mathcal{I}$ 36'14	-1°-27'-37	min. Earth dist.	3097 Feb 26 19:36	8° $\mathcal{M}$ 33'54	8.19918 AU
minimum elong	3091 Jun 11 21:20	21° $\mathcal{I}$ 36'15	1°27'38	direct	3097 May 05 23:02	5° $\mathcal{M}$ 04'28	
max. Earth dist.	3091 Jun 12 00:59	21° $\mathcal{I}$ 37'26	10.13293 AU	evening set	3097 Aug 20 01:20	13° $\mathcal{M}$ 11'15	
morning rise	3091 Jun 29 20:38	23° $\mathcal{I}$ 54'26					
	3091 Aug 25 01:59	0° $\mathcal{\Theta}$		conjunction	3097 Sep 06 23:04	15° $\mathcal{M}$ 27'11	1°28'59
retrograde	3091 Oct 14 05:09	2° $\mathcal{\Theta}$ 09'30		minimum elong	3097 Sep 06 23:01	15° $\mathcal{M}$ 27'10	1°28'59
	3091 Dec 04 06:59	30° $\mathcal{R}\mathcal{I}$		max. Earth dist.	3097 Sep 07 01:27	15° $\mathcal{M}$ 27'57	10.23769 AU
opposition	3091 Dec 20 22:24	28° $\mathcal{I}$ 40'24	-1°-33'-13	morning rise	3097 Sep 24 17:33	17° $\mathcal{M}$ 42'04	
min. Earth dist.	3091 Dec 20 19:20	28° $\mathcal{I}$ 41'01	8.11085 AU	retrograde	3098 Jan 04 18:38	25° $\mathcal{M}$ 31'17	
direct	3092 Feb 25 12:07	25° $\mathcal{I}$ 13'46		opposition	3098 Mar 12 14:06	22° $\mathcal{M}$ 06'51	2°03'52
	3092 May 11 09:39	0° $\mathcal{\Theta}$		min. Earth dist.	3098 Mar 12 11:55	22° $\mathcal{M}$ 07'17	8.28115 AU
evening set	3092 Jun 07 17:12	3° $\mathcal{\Theta}$ 16'50		direct	3098 May 20 04:42	18° $\mathcal{M}$ 38'14	
				evening set	3098 Sep 03 09:17	26° $\mathcal{M}$ 40'21	
conjunction	3092 Jun 25 17:12	5° $\mathcal{\Theta}$ 35'42	-1°-1'-6				
minimum elong	3092 Jun 25 17:14	5° $\mathcal{\Theta}$ 35'43	1°01'07	conjunction	3098 Sep 21 02:58	28° $\mathcal{M}$ 53'48	1°49'26
max. Earth dist.	3092 Jun 25 21:33	5° $\mathcal{\Theta}$ 37'07	10.09308 AU	minimum elong	3098 Sep 21 02:55	28° $\mathcal{M}$ 53'47	1°49'26
morning rise	3092 Jul 13 19:25	7° $\mathcal{\Theta}$ 55'18		max. Earth dist.	3098 Sep 21 04:54	28° $\mathcal{M}$ 54'24	10.32655 AU
retrograde	3092 Oct 27 16:14	16° $\mathcal{\Theta}$ 10'17			3098 Sep 29 21:00	0° $\mathcal{\Omega}$	





























































































































morning rise	3098 Oct 08 16:43	1° <u>♂</u> 06'00	
retrograde	3099 Jan 18 00:30	8° <u>♂</u> 47'10	
opposition	3099 Mar 26 01:34	5° <u>♂</u> 23'55	2°25'14
min. Earth dist.	3099 Mar 25 23:18	5° <u>♂</u> 24'22	8.37613 AU
direct	3099 Jun 03 04:52	1° <u>♂</u> 55'55	
evening set	3099 Sep 17 08:19	9° <u>♂</u> 52'00	
conjunction	3099 Oct 04 21:36	12° <u>♂</u> 02'45	2°03'43
minimum elong	3099 Oct 04 21:34	12° <u>♂</u> 02'45	2°03'43
max. Earth dist.	3099 Oct 04 23:31	12° <u>♂</u> 03'21	10.42576 AU
morning rise	3099 Oct 22 06:24	14° <u>♂</u> 12'10	
retrograde	3100 Jan 31 00:37	21° <u>♂</u> 45'17	
opposition	3100 Apr 08 08:00	18° <u>♂</u> 23'11	2°38'36
min. Earth dist.	3100 Apr 08 06:12	18° <u>♂</u> 23'33	8.47870 AU
direct	3100 Jun 16 22:18	14° <u>♂</u> 56'00	
evening set	3100 Sep 30 21:25	22° <u>♂</u> 45'03	
conjunction	3100 Oct 18 06:20	24° <u>♂</u> 53'10	2°11'28
minimum elong	3100 Oct 18 06:19	24° <u>♂</u> 53'09	2°11'28
max. Earth dist.	3100 Oct 18 07:55	24° <u>♂</u> 53'39	10.52995 AU
morning rise	3100 Nov 04 10:33	26° <u>♂</u> 59'53	
	3100 Nov 30 13:50	0° <u>♂</u>	



retrograde	3100 Jan 31 00:37	21°♂45'17		max. Earth dist.	3105 Dec 17 15:27	25°♂00'47	10.95910 AU
opposition	3100 Apr 08 08:00	18°♂23'11	2°38'36	morning rise	3106 Jan 03 09:26	26°♂59'30	
min. Earth dist.	3100 Apr 08 06:12	18°♂23'33	8.47870 AU		3106 Jan 30 20:28	0°♂	
direct	3100 Jun 16 22:18	14°♂56'00		retrograde	3106 Apr 13 06:05	4°♂00'53	
evening set	3100 Sep 30 21:25	22°♂45'03		opposition	3106 Jun 22 00:14	0°♂43'12	1°28'00
				min. Earth dist.	3106 Jun 22 02:34	0°♂42'46	8.98291 AU
conjunction	3100 Oct 18 06:20	24°♂53'10	2°11'28		3106 Jul 01 18:30	30°♂♂	
minimum elong	3100 Oct 18 06:19	24°♂53'09	2°11'28	direct	3106 Sep 01 01:43	27°♂22'33	
max. Earth dist.	3100 Oct 18 07:55	24°♂53'39	10.52995 AU		3106 Oct 29 14:12	0°♂	
morning rise	3100 Nov 04 10:33	26°♂59'53		evening set	3106 Dec 12 13:32	4°♂31'34	
	3100 Nov 30 13:50	0°♂					
retrograde	3101 Feb 12 17:14	4°♂25'17		conjunction	3106 Dec 29 06:47	6°♂29'37	1°00'18
opposition	3101 Apr 21 09:26	1°♂04'18	2°43'49	minimum elong	3106 Dec 29 06:49	6°♂29'38	1°00'17
min. Earth dist.	3101 Apr 21 08:38	1°♂04'27	8.58357 AU	max. Earth dist.	3106 Dec 29 03:26	6°♂28'38	11.00102 AU
	3101 May 05 09:08	30°♂♂		morning rise	3107 Jan 14 22:24	8°♂27'12	
direct	3101 Jun 30 09:58	27°♂38'04		retrograde	3107 Apr 25 01:29	15°♂27'46	
	3101 Aug 24 00:30	0°♂		opposition	3107 Jul 04 05:03	12°♂10'08	0°58'56
evening set	3101 Oct 14 00:20	5°♂19'34		min. Earth dist.	3107 Jul 04 08:00	12°♂09'35	9.01482 AU
				direct	3107 Sep 13 05:05	8°♂50'20	
conjunction	3101 Oct 31 05:11	7°♂25'11	2°12'43	evening set	3107 Dec 24 01:11	15°♂55'45	
minimum elong	3101 Oct 31 05:11	7°♂25'11	2°12'43				
max. Earth dist.	3101 Oct 31 05:39	7°♂25'19	10.63393 AU	conjunction	3108 Jan 09 17:35	17°♂53'20	0°35'33
morning rise	3101 Nov 17 05:34	9°♂29'29		minimum elong	3108 Jan 09 17:36	17°♂53'21	0°35'33
	3102 Jan 10 05:09	15°♂		max. Earth dist.	3108 Jan 09 14:00	17°♂52'17	11.02309 AU
retrograde	3102 Feb 25 02:59	16°♂47'51		morning rise	3108 Jan 26 09:08	19°♂50'41	
	3102 Apr 13 12:31	15°♂♂		retrograde	3108 May 05 23:39	26°♂51'56	
opposition	3102 May 04 05:50	13°♂27'51	2°41'13	opposition	3108 Jul 15 09:13	23°♂34'04	0°27'40
min. Earth dist.	3102 May 04 06:14	13°♂27'47	8.68562 AU	min. Earth dist.	3108 Jul 15 11:51	23°♂33'35	9.02644 AU
direct	3102 Jul 13 16:26	10°♂02'42		direct	3108 Sep 24 06:14	20°♂14'58	
	3102 Oct 03 18:38	15°♂		evening set	3109 Jan 03 11:32	27°♂18'04	
evening set	3102 Oct 26 17:48	17°♂36'34					
				conjunction	3109 Jan 20 03:33	29°♂15'33	0°09'30
conjunction	3102 Nov 12 19:06	19°♂39'57	2°07'49	minimum elong	3109 Jan 20 03:32	29°♂15'33	0°09'30
minimum elong	3102 Nov 12 19:07	19°♂39'57	2°07'49	behind sun begin	3109 Jan 19 21:42	29°♂13'50	
max. Earth dist.	3102 Nov 12 18:00	19°♂39'37	10.73282 AU	behind sun end	3109 Jan 20 09:23	29°♂17'15	
morning rise	3102 Nov 29 16:24	21°♂42'08		max. Earth dist.	3109 Jan 20 00:36	29°♂14'42	11.02448 AU
retrograde	3103 Mar 09 08:14	28°♂54'24			3109 Jan 26 09:50	0°♂	
opposition	3103 May 16 21:33	25°♂35'16	2°31'25	morning rise	3109 Feb 05 19:15	1°♂12'59	
min. Earth dist.	3103 May 16 22:25	25°♂35'06	8.78023 AU	retrograde	3109 May 17 22:57	8°♂16'23	
direct	3103 Jul 26 15:40	22°♂11'16		desc. node	3109 Jun 03 06:41	8°♂03'29	
evening set	3103 Nov 08 02:31	29°♂37'46		opposition	3109 Jul 27 13:29	4°♂58'02	0°-4'-40
	3103 Nov 11 05:43	0°♂♂		min. Earth dist.	3109 Jul 27 15:44	4°♂57'37	9.01735 AU
				direct	3109 Oct 06 04:03	1°♂39'26	
conjunction	3103 Nov 25 00:59	1°♂39'17	1°57'22	evening set	3110 Jan 14 22:11	8°♂41'38	
minimum elong	3103 Nov 25 01:01	1°♂39'18	1°57'22				
max. Earth dist.	3103 Nov 24 23:19	1°♂38'47	10.82236 AU	conjunction	3110 Jan 31 13:59	10°♂39'18	0°-17'-5
morning rise	3103 Dec 11 19:53	3°♂39'45		minimum elong	3110 Jan 31 13:59	10°♂39'17	0°17'05
retrograde	3104 Mar 20 09:06	10°♂47'04		max. Earth dist.	3110 Jan 31 10:53	10°♂38'23	11.00508 AU
opposition	3104 May 28 09:26	7°♂28'36	2°15'18	morning rise	3110 Feb 17 06:18	12°♂37'10	
min. Earth dist.	3104 May 28 10:12	7°♂28'27	8.86340 AU		3110 Mar 10 16:20	15°♂	
direct	3104 Aug 07 08:48	4°♂05'48		retrograde	3110 May 30 02:11	19°♂44'07	
evening set	3104 Nov 19 03:33	11°♂25'31		opposition	3110 Aug 08 19:10	16°♂25'06	0°-36'-58
				min. Earth dist.	3110 Aug 08 21:53	16°♂24'36	8.98777 AU
conjunction	3104 Dec 05 23:54	13°♂25'31	1°42'05		3110 Aug 28 14:23	15°♂♂	
minimum elong	3104 Dec 05 23:56	13°♂25'32	1°42'05	direct	3110 Oct 18 01:47	13°♂06'44	
max. Earth dist.	3104 Dec 05 22:25	13°♂25'05	10.89880 AU		3110 Dec 05 15:01	15°♂	
morning rise	3104 Dec 22 17:00	15°♂24'38		evening set	3111 Jan 26 10:34	20°♂09'24	
retrograde	3105 Apr 01 09:14	22°♂28'19					
opposition	3105 Jun 09 18:06	19°♂10'21	1°53'49	conjunction	3111 Feb 12 02:21	22°♂07'35	0°-43'-3
min. Earth dist.	3105 Jun 09 19:13	19°♂10'08	8.93183 AU	minimum elong	3111 Feb 12 02:19	22°♂07'35	0°43'03
direct	3105 Aug 19 20:31	15°♂48'41		max. Earth dist.	3111 Feb 11 22:27	22°♂06'26	10.96548 AU
evening set	3105 Nov 30 22:46	23°♂02'29		morning rise	3111 Feb 28 19:41	24°♂06'14	
					3111 May 01 21:39	0°♂♂	
conjunction	3105 Dec 17 17:24	25°♂01'21	1°22'46	retrograde	3111 Jun 11 07:40	1°♂18'06	
minimum elong	3105 Dec 17 17:26	25°♂01'22	1°22'46		3111 Jul 22 17:22	30°♂♂	



opposition	3111 Aug 21 03:00	27°  58'11	-1°-8'-5	opposition	3117 Nov 04 12:43	11°  49'03	-2°-42'-26
min. Earth dist.	3111 Aug 21 06:12	27°  57'35	8.93859 AU	min. Earth dist.	3117 Nov 04 13:17	11°  48'56	8.36961 AU
direct	3111 Oct 29 23:34	24°  39'48		direct	3118 Jan 10 17:51	8°  26'06	
	3112 Jan 22 19:29	0°  ✕			3118 Apr 12 16:15	15°  8	
evening set	3112 Feb 07 02:08	1°  ✕44'23		evening set	3118 Apr 21 16:45	16°  806'16	
conjunction	3112 Feb 23 18:27	3°  ✕43'24	-1°-7'-31	conjunction	3118 May 09 01:12	18°  817'22	-2°-8'-1
minimum elong	3112 Feb 23 18:25	3°  ✕43'24	1°07'32	minimum elong	3118 May 09 01:13	18°  817'23	2°08'01
max. Earth dist.	3112 Feb 23 14:28	3°  ✕42'13	10.90676 AU	max. Earth dist.	3118 May 09 01:34	18°  817'29	10.31811 AU
morning rise	3112 Mar 11 13:07	5°  ✕43'08		morning rise	3118 May 26 14:02	20°  829'55	
retrograde	3112 Jun 22 18:17	13°  ✕01'11		retrograde	3118 Sep 10 05:48	28°  835'35	
opposition	3112 Sep 01 13:34	9°  ✕40'08	-1°-36'-49	opposition	3118 Nov 18 03:21	25°  807'06	-2°-32'-43
min. Earth dist.	3112 Sep 01 16:41	9°  ✕39'33	8.87102 AU	min. Earth dist.	3118 Nov 18 02:32	25°  807'16	8.27177 AU
direct	3112 Nov 10 01:06	6°  ✕21'30		direct	3119 Jan 24 01:33	21°  842'56	
evening set	3113 Feb 17 22:14	13°  ✕29'24		evening set	3119 May 05 13:12	29°  830'37	
					3119 May 09 10:38	0°  II	
conjunction	3113 Mar 06 15:43	15°  ✕29'39	-1°-29'-28	conjunction	3119 May 23 02:27	1°  II44'24	-1°-56'-28
minimum elong	3113 Mar 06 15:41	15°  ✕29'38	1°29'30	minimum elong	3119 May 23 02:29	1°  II44'25	1°56'28
max. Earth dist.	3113 Mar 06 12:32	15°  ✕28'41	10.83031 AU	max. Earth dist.	3119 May 23 04:14	1°  II44'58	10.22647 AU
morning rise	3113 Mar 23 12:00	17°  ✕30'47		morning rise	3119 Jun 09 19:44	3°  II59'30	
retrograde	3113 Jul 05 12:44	24°  ✕56'09		retrograde	3119 Sep 24 12:58	12°  II10'36	
opposition	3113 Sep 14 03:48	21°  ✕33'51	-2°-1'-57	opposition	3119 Dec 01 22:16	8°  II41'24	-2°-14'-21
min. Earth dist.	3113 Sep 14 06:10	21°  ✕33'24	8.78679 AU	min. Earth dist.	3119 Dec 01 20:20	8°  II41'48	8.18730 AU
direct	3113 Nov 22 04:18	18°  ✕14'46		direct	3120 Feb 06 14:27	5°  II15'58	
evening set	3114 Mar 02 00:22	25°  ✕27'19		evening set	3120 May 18 18:30	13°  II10'46	
conjunction	3114 Mar 18 19:25	27°  ✕29'08	-1°-47'-55	conjunction	3120 Jun 05 12:28	15°  II27'00	-1°-38'-11
minimum elong	3114 Mar 18 19:23	27°  ✕29'08	1°47'57	minimum elong	3120 Jun 05 12:32	15°  II27'01	1°38'12
max. Earth dist.	3114 Mar 18 16:23	27°  ✕28'13	10.73867 AU	max. Earth dist.	3120 Jun 05 14:50	15°  II27'46	10.15080 AU
morning rise	3114 Apr 04 17:49	29°  ✕32'03		morning rise	3120 Jun 23 10:00	17°  II44'24	
	3114 Apr 08 16:10	0°  ✕		retrograde	3120 Oct 07 23:14	25°  II58'56	
retrograde	3114 Jul 18 12:53	7°  ✕05'35		opposition	3120 Dec 14 20:32	22°  II29'22	-1°-47'-55
opposition	3114 Sep 26 22:31	3°  ✕41'58	-2°-22'-14	min. Earth dist.	3120 Dec 14 18:12	22°  II29'51	8.12103 AU
min. Earth dist.	3114 Sep 27 00:27	3°  ✕41'36	8.68943 AU	direct	3121 Feb 19 09:42	19°  II02'44	
direct	3114 Dec 04 10:08	0°  ✕22'13		evening set	3121 Jun 02 07:19	27°  II03'47	
evening set	3115 Mar 14 09:45	7°  ✕40'37					
conjunction	3115 Mar 31 06:57	9°  ✕44'21	-2°-1'-51	conjunction	3121 Jun 20 05:32	29°  II22'04	-1°-14'00
minimum elong	3115 Mar 31 06:55	9°  ✕44'20	2°01'52	minimum elong	3121 Jun 20 05:35	29°  II22'05	1°14'00
max. Earth dist.	3115 Mar 31 03:45	9°  ✕43'22	10.63638 AU	max. Earth dist.	3121 Jun 20 08:13	29°  II22'56	10.09554 AU
morning rise	3115 Apr 17 08:14	11°  ✕49'21			3121 Jun 25 02:47	0°  ☾	
retrograde	3115 Jul 31 19:29	19°  ✕31'28		morning rise	3121 Jul 08 06:36	1°  ☾41'16	
opposition	3115 Oct 09 22:14	16°  ✕06'31	-2°-36'-28	retrograde	3121 Oct 22 10:35	9°  ☾57'04	
min. Earth dist.	3115 Oct 10 00:04	16°  ✕06'09	8.58392 AU	opposition	3121 Dec 28 21:20	6°  ☾27'29	-1°-14'-47
direct	3115 Dec 16 22:42	12°  ✕45'50		min. Earth dist.	3121 Dec 28 18:52	6°  ☾27'59	8.07701 AU
evening set	3116 Mar 26 03:08	20°  ✕10'58		direct	3122 Mar 05 11:30	2°  ☾59'46	
				evening set	3122 Jun 17 01:55	11°  ☾05'48	
conjunction	3116 Apr 12 03:20	22°  ✕16'57	-2°-10'-20	conjunction	3122 Jul 05 03:28	13°  ☾25'31	0°-45'-12
minimum elong	3116 Apr 12 03:19	22°  ✕16'56	2°10'21	minimum elong	3122 Jul 05 03:30	13°  ☾25'31	0°45'13
max. Earth dist.	3116 Apr 12 00:32	22°  ✕16'04	10.52861 AU	max. Earth dist.	3122 Jul 05 06:38	13°  ☾26'32	10.06406 AU
morning rise	3116 Apr 29 08:05	24°  ✕24'19		morning rise	3122 Jul 23 06:51	15°  ☾45'47	
	3116 Jun 21 13:11	0°  ✕		retrograde	3122 Nov 05 19:59	24°  ☾00'39	
retrograde	3116 Aug 13 08:59	2°  ☾14'59		opposition	3123 Jan 11 23:19	20°  ☾31'23	0°-36'-54
	3116 Oct 06 14:49	30°  ☾17'50		min. Earth dist.	3123 Jan 11 20:33	20°  ☾31'57	8.05802 AU
opposition	3116 Oct 22 03:01	28°  ✕48'43	-2°-43'-30	direct	3123 Mar 19 18:10	17°  ☾02'49	
min. Earth dist.	3116 Oct 22 04:37	28°  ✕48'24	8.47551 AU	evening set	3123 Jul 02 00:32	25°  ☾12'18	
direct	3116 Dec 28 16:51	25°  ✕26'57					
	3117 Mar 13 13:56	0°  ☾		conjunction	3123 Jul 20 04:04	27°  ☾32'38	0°-13'-37
evening set	3117 Apr 08 05:23	2°  ☾59'28		minimum elong	3123 Jul 20 04:04	27°  ☾32'38	0°13'38
conjunction	3117 Apr 25 09:23	5°  ☾07'55	-2°-12'-34	behind sun begin	3123 Jul 20 00:16	27°  ☾31'25	
minimum elong	3117 Apr 25 09:23	5°  ☾07'55	2°12'34	behind sun end	3123 Jul 20 07:53	27°  ☾33'51	
max. Earth dist.	3117 Apr 25 08:02	5°  ☾07'30	10.42065 AU	max. Earth dist.	3123 Jul 20 07:40	27°  ☾33'47	10.05831 AU
morning rise	3117 May 12 17:59	7°  ☾17'50		morning rise	3123 Aug 07 08:10	29°  ☾53'06	
	3117 Aug 09 07:34	15°  ☾			3123 Aug 08 05:54	0°  ♈	
retrograde	3117 Aug 27 04:32	15°  ☾16'31		retrograde	3123 Nov 20 03:18	8°  ♈04'56	
	3117 Sep 14 03:19	15°  ☾		asc. node	3123 Dec 26 13:24	6°  ♈54'07	



opposition	3124 Jan 26 00:58	4°♏36'18	0°03'15	opposition	3130 Apr 15 21:05	25°♊36'30	2°42'15
min. Earth dist.	3124 Jan 25 21:45	4°♏36'58	8.06526 AU	min. Earth dist.	3130 Apr 15 19:20	25°♊36'51	8.53680 AU
direct	3124 Apr 02 02:16	1°♏07'09		direct	3130 Jun 24 16:56	22°♊10'08	
evening set	3124 Jul 16 00:30	9°♏18'18		evening set	3130 Oct 08 11:59	29°♊55'30	
					3130 Oct 09 02:54	0°♌	
conjunction	3124 Aug 03 04:22	11°♏38'23	0°18'47	conjunction	3130 Oct 25 18:39	2°♌02'16	2°12'47
minimum elong	3124 Aug 03 04:20	11°♏38'22	0°18'47	minimum elong	3130 Oct 25 18:39	2°♌02'16	2°12'47
max. Earth dist.	3124 Aug 03 08:34	11°♏39'44	10.07865 AU	max. Earth dist.	3130 Oct 25 19:52	2°♌02'39	10.58955 AU
morning rise	3124 Aug 21 07:24	13°♏58'11		morning rise	3130 Nov 11 20:53	4°♌07'42	
	3124 Aug 29 12:56	15°♏		retrograde	3131 Feb 19 22:36	11°♌29'28	
retrograde	3124 Dec 03 07:53	22°♏05'09		opposition	3131 Apr 28 20:14	8°♌09'24	2°43'07
opposition	3125 Feb 08 01:23	18°♏37'26	0°43'01	min. Earth dist.	3131 Apr 28 18:49	8°♌09'41	8.64387 AU
min. Earth dist.	3125 Feb 07 21:26	18°♏38'15	8.09833 AU	direct	3131 Jul 08 02:42	4°♌44'11	
direct	3125 Apr 16 10:58	15°♏08'01		evening set	3131 Oct 21 10:20	12°♌21'46	
evening set	3125 Jul 30 22:54	23°♏18'55					
conjunction	3125 Aug 18 01:24	25°♏37'53	0°49'50	conjunction	3131 Nov 07 13:19	14°♌26'09	2°10'36
minimum elong	3125 Aug 18 01:22	25°♏37'52	0°49'49	minimum elong	3131 Nov 07 13:20	14°♌26'09	2°10'36
max. Earth dist.	3125 Aug 18 06:15	25°♏39'27	10.12389 AU	max. Earth dist.	3131 Nov 07 14:09	14°♌26'24	10.69406 AU
morning rise	3125 Sep 05 01:47	27°♏56'11			3131 Nov 12 04:22	15°♌	
	3125 Sep 21 21:54	0°♐		morning rise	3131 Nov 24 11:53	16°♌29'15	
retrograde	3125 Dec 17 07:42	5°♐56'53		retrograde	3132 Mar 03 07:47	23°♌44'22	
opposition	3126 Feb 21 23:15	2°♐30'18	1°19'49	opposition	3132 May 10 14:38	20°♌25'16	2°36'28
min. Earth dist.	3126 Feb 21 19:07	2°♐31'08	8.15523 AU	min. Earth dist.	3132 May 10 14:17	20°♌25'20	8.74447 AU
	3126 Mar 28 06:35	30°♐♏		direct	3132 Jul 20 04:19	17°♌01'13	
direct	3126 Apr 30 18:50	29°♏00'58		evening set	3132 Nov 01 23:30	24°♌31'08	
	3126 Jun 03 04:40	0°♐					
evening set	3126 Aug 14 17:23	7°♐09'43		conjunction	3132 Nov 18 23:18	26°♌33'28	2°02'34
				minimum elong	3132 Nov 18 23:20	26°♌33'28	2°02'35
conjunction	3126 Sep 01 17:06	9°♐26'51	1°17'39	max. Earth dist.	3132 Nov 18 22:54	26°♌33'20	10.78956 AU
minimum elong	3126 Sep 01 17:02	9°♐26'50	1°17'38	morning rise	3132 Dec 05 19:05	28°♌34'39	
max. Earth dist.	3126 Sep 01 21:54	9°♐28'23	10.19126 AU		3132 Dec 18 01:55	0°♑	
morning rise	3126 Sep 19 13:37	11°♐43'01		retrograde	3133 Mar 15 10:48	5°♑44'10	
retrograde	3126 Dec 31 00:35	19°♐36'21		opposition	3133 May 23 04:43	2°♑25'51	2°23'04
opposition	3127 Mar 07 17:30	16°♐11'05	1°51'27	min. Earth dist.	3133 May 23 06:10	2°♑25'35	8.83353 AU
min. Earth dist.	3127 Mar 07 13:55	16°♐11'49	8.23247 AU		3133 Jun 28 03:57	30°♐♌	
direct	3127 May 15 01:03	12°♐42'07		direct	3133 Aug 02 00:12	29°♌02'56	
evening set	3127 Aug 29 05:36	20°♐47'01			3133 Sep 05 10:45	0°♑	
				evening set	3133 Nov 14 04:29	6°♑25'47	
conjunction	3127 Sep 16 01:24	23°♐01'47	1°40'41				
minimum elong	3127 Sep 16 01:21	23°♐01'46	1°40'41	conjunction	3133 Dec 01 01:41	8°♑26'26	1°49'20
max. Earth dist.	3127 Sep 16 05:27	23°♐03'04	10.27669 AU	minimum elong	3133 Dec 01 01:43	8°♑26'26	1°49'21
morning rise	3127 Oct 03 17:20	25°♐15'22		max. Earth dist.	3133 Nov 30 23:06	8°♑25'39	10.87134 AU
	3127 Nov 15 03:07	0°♑		morning rise	3133 Dec 17 19:36	10°♑26'07	
retrograde	3128 Jan 13 10:29	3°♑00'44		retrograde	3134 Mar 27 10:49	17°♑31'27	
	3128 Mar 15 12:09	30°♐♐		opposition	3134 Jun 04 15:12	14°♑13'41	2°03'52
opposition	3128 Mar 20 07:39	29°♐36'53	2°16'18	min. Earth dist.	3134 Jun 04 17:46	14°♑13'12	8.90690 AU
min. Earth dist.	3128 Mar 20 05:00	29°♐37'25	8.32540 AU	direct	3134 Aug 14 15:34	10°♑51'50	
direct	3128 May 28 03:16	26°♐08'34		evening set	3134 Nov 26 02:49	18°♑08'30	
	3128 Aug 05 23:30	0°♑					
evening set	3128 Sep 11 09:23	4°♑08'01		conjunction	3134 Dec 12 22:04	20°♑07'53	1°31'42
				minimum elong	3134 Dec 12 22:06	20°♑07'53	1°31'42
conjunction	3128 Sep 29 00:41	6°♑20'07	1°57'52	max. Earth dist.	3134 Dec 12 18:21	20°♑06'46	10.93617 AU
minimum elong	3128 Sep 29 00:38	6°♑20'06	1°57'52	morning rise	3134 Dec 29 14:40	22°♑06'28	
max. Earth dist.	3128 Sep 29 03:31	6°♑21'01	10.37518 AU	retrograde	3135 Apr 08 08:41	29°♑09'01	
morning rise	3128 Oct 16 11:48	8°♑30'55		opposition	3135 Jun 16 22:55	25°♑51'32	1°39'50
retrograde	3129 Jan 25 13:22	16°♑08'09		min. Earth dist.	3135 Jun 17 01:40	25°♑51'01	8.96226 AU
opposition	3129 Apr 02 16:59	12°♑45'41	2°33'21	direct	3135 Aug 27 00:58	22°♑30'39	
min. Earth dist.	3129 Apr 02 15:01	12°♑46'04	8.42872 AU	evening set	3135 Dec 07 19:56	29°♑42'08	
direct	3129 Jun 11 00:46	9°♑18'16			3135 Dec 10 09:18	0°♒	
evening set	3129 Sep 25 03:42	17°♑11'03					
conjunction	3129 Oct 12 14:30	19°♑20'26	2°08'37	conjunction	3135 Dec 24 13:52	1°♒40'35	1°10'31
minimum elong	3129 Oct 12 14:28	19°♑20'25	2°08'37	minimum elong	3135 Dec 24 13:54	1°♒40'36	1°10'31
max. Earth dist.	3129 Oct 12 16:12	19°♑20'58	10.48136 AU	max. Earth dist.	3135 Dec 24 10:18	1°♒39'32	10.98231 AU
morning rise	3129 Oct 29 20:59	21°♑28'28		morning rise	3136 Jan 10 05:37	3°♒38'28	
retrograde	3130 Feb 07 08:47	28°♑57'42		retrograde	3136 Apr 19 06:31	10°♒39'42	
				opposition	3136 Jun 28 04:52	7°♒22'11	1°12'03



min. Earth dist.	3136 Jun 28 07:43	7°♄21'40	8.99829 AU	opposition	3142 Sep 09 01:38	16°♄38'55	-1°-51'-42
direct	3136 Sep 07 06:31	4°♄02'06		min. Earth dist.	3142 Sep 09 04:39	16°♄38'21	8.80024 AU
evening set	3136 Dec 18 09:19	11°♄09'30		direct	3142 Nov 17 06:14	13°♄19'24	
				evening set	3143 Feb 25 03:32	20°♄30'45	
conjunction	3137 Jan 04 02:17	13°♄07'24	0°46'39				
minimum elong	3137 Jan 04 02:18	13°♄07'24	0°46'38	conjunction	3143 Mar 13 21:47	22°♄32'06	-1°-40'-30
max. Earth dist.	3137 Jan 03 22:22	13°♄06'14	11.00855 AU	minimum elong	3143 Mar 13 21:45	22°♄32'05	1°40'31
morning rise	3137 Jan 20 17:45	15°♄04'55		max. Earth dist.	3143 Mar 13 18:07	22°♄30'59	10.75587 AU
retrograde	3137 May 01 04:58	22°♄06'14		morning rise	3143 Mar 30 19:26	24°♄34'30	
opposition	3137 Jul 10 09:48	18°♄48'28	0°41'36		3143 May 22 21:39	0°♄	
min. Earth dist.	3137 Jul 10 13:30	18°♄47'47	9.01410 AU	retrograde	3143 Jul 13 05:26	2°♄05'17	
direct	3137 Sep 19 07:33	15°♄28'57			3143 Sep 04 04:42	30°♄	
evening set	3137 Dec 29 20:46	22°♄33'32		opposition	3143 Sep 21 18:53	28°♄41'39	-2°-14'-17
				min. Earth dist.	3143 Sep 21 21:20	28°♄41'11	8.71006 AU
conjunction	3138 Jan 15 12:57	24°♄31'11	0°21'01	direct	3143 Nov 29 11:51	25°♄21'35	
minimum elong	3138 Jan 15 12:57	24°♄31'12	0°21'01		3144 Feb 14 09:23	0°♄	
max. Earth dist.	3138 Jan 15 07:57	24°♄29'43	11.01424 AU	evening set	3144 Mar 08 09:52	2°♄38'13	
morning rise	3138 Feb 01 04:39	26°♄28'43					
	3138 Mar 06 01:07	0°♄		conjunction	3144 Mar 25 06:11	4°♄41'20	-1°-56'-31
retrograde	3138 May 13 01:40	3°♄31'34		minimum elong	3144 Mar 25 06:09	4°♄41'19	1°56'32
opposition	3138 Jul 22 14:25	0°♄13'15	0°09'33	max. Earth dist.	3144 Mar 25 03:57	4°♄40'39	10.66047 AU
min. Earth dist.	3138 Jul 22 18:49	0°♄12'26	9.00934 AU	morning rise	3144 Apr 11 06:15	6°♄45'38	
	3138 Jul 25 14:09	30°♄		retrograde	3144 Jul 25 09:19	14°♄24'49	
direct	3138 Oct 01 07:13	26°♄54'06		opposition	3144 Oct 03 16:36	10°♄59'53	-2°-31'-17
desc. node	3138 Nov 10 08:45	28°♄11'18		min. Earth dist.	3144 Oct 03 17:52	10°♄59'39	8.61102 AU
	3138 Dec 03 19:39	0°♄		direct	3144 Dec 10 23:21	7°♄39'08	
evening set	3139 Jan 10 07:33	3°♄57'16		evening set	3145 Mar 21 00:01	15°♄02'02	
conjunction	3139 Jan 26 23:22	5°♄55'00	0°-5'-32	conjunction	3145 Apr 06 23:02	17°♄07'14	-2°-7'-27
minimum elong	3139 Jan 26 23:22	5°♄55'00	0°05'32	minimum elong	3145 Apr 06 23:01	17°♄07'14	2°07'28
behind sun begin	3139 Jan 26 16:39	5°♄53'02		max. Earth dist.	3145 Apr 06 22:09	17°♄06'58	10.55833 AU
behind sun end	3139 Jan 27 06:06	5°♄56'58		morning rise	3145 Apr 24 02:07	19°♄13'45	
max. Earth dist.	3139 Jan 26 18:11	5°♄53'29	10.99938 AU	retrograde	3145 Aug 07 21:42	27°♄01'29	
morning rise	3139 Feb 12 15:36	7°♄52'51		opposition	3145 Oct 16 19:29	23°♄35'21	-2°-41'-30
retrograde	3139 May 25 03:10	14°♄58'45		min. Earth dist.	3145 Oct 16 19:28	23°♄35'21	8.50747 AU
opposition	3139 Aug 03 19:55	11°♄39'39	0°-22'-57	direct	3145 Dec 23 13:56	20°♄13'45	
min. Earth dist.	3139 Aug 03 23:52	11°♄38'55	8.98436 AU	evening set	3146 Apr 02 22:40	27°♄43'41	
direct	3139 Oct 13 07:18	8°♄20'41					
	3140 Jan 18 09:05	15°♄		conjunction	3146 Apr 20 01:00	29°♄51'12	-2°-12'-26
evening set	3140 Jan 21 19:11	15°♄23'46		minimum elong	3146 Apr 20 00:59	29°♄51'12	2°12'26
				max. Earth dist.	3146 Apr 20 00:47	29°♄51'08	10.45426 AU
conjunction	3140 Feb 07 11:07	17°♄21'55	0°-31'-51		3146 Apr 21 05:06	0°♄	
minimum elong	3140 Feb 07 11:06	17°♄21'55	0°31'52	morning rise	3146 May 07 07:46	2°♄00'10	
max. Earth dist.	3140 Feb 07 07:02	17°♄20'42	10.96452 AU	retrograde	3146 Aug 21 16:02	9°♄56'08	
morning rise	3140 Feb 24 04:02	19°♄20'25		opposition	3146 Oct 30 03:41	6°♄28'55	-2°-43'-57
retrograde	3140 Jun 05 08:31	26°♄30'46		min. Earth dist.	3146 Oct 30 02:57	6°♄29'04	8.40448 AU
opposition	3140 Aug 15 03:00	23°♄10'42	0°-54'-48	direct	3147 Jan 05 11:13	3°♄06'23	
min. Earth dist.	3140 Aug 15 06:05	23°♄10'07	8.94003 AU	evening set	3147 Apr 16 06:34	10°♄43'47	
direct	3140 Oct 24 05:04	19°♄51'45					
evening set	3141 Feb 01 09:32	26°♄56'12		conjunction	3147 May 03 12:55	12°♄53'51	-2°-10'-47
				minimum elong	3147 May 03 12:56	12°♄53'51	2°10'48
conjunction	3141 Feb 18 01:50	28°♄55'05	0°-57'-9	max. Earth dist.	3147 May 03 13:17	12°♄53'58	10.35362 AU
minimum elong	3141 Feb 18 01:48	28°♄55'05	0°57'09	morning rise	3147 May 20 23:58	15°♄05'23	
max. Earth dist.	3141 Feb 17 22:05	28°♄53'58	10.91088 AU		3147 May 20 06:34	15°♄	
	3141 Feb 27 03:06	0°♄		retrograde	3147 Sep 04 15:34	23°♄08'43	
morning rise	3141 Mar 06 19:50	0°♄54'33		opposition	3147 Nov 12 16:50	19°♄40'38	-2°-37'-54
retrograde	3141 Jun 17 17:55	8°♄10'39		min. Earth dist.	3147 Nov 12 15:46	19°♄40'51	8.30751 AU
opposition	3141 Aug 27 12:30	4°♄49'28	-1°-24'-47	direct	3148 Jan 18 16:27	16°♄17'03	
min. Earth dist.	3141 Aug 27 15:20	4°♄48'56	8.87789 AU	evening set	3148 Apr 28 23:42	24°♄01'59	
direct	3141 Nov 05 04:32	1°♄30'20					
evening set	3142 Feb 13 03:56	8°♄37'35		conjunction	3148 May 16 10:43	26°♄14'41	-2°-2'-10
				minimum elong	3148 May 16 10:46	26°♄14'42	2°02'11
conjunction	3142 Mar 01 20:54	10°♄37'33	-1°-20'-22	max. Earth dist.	3148 May 16 12:08	26°♄15'08	10.26179 AU
minimum elong	3142 Mar 01 20:51	10°♄37'32	1°20'23	morning rise	3148 Jun 03 02:16	28°♄28'48	
max. Earth dist.	3142 Mar 01 16:42	10°♄36'17	10.84045 AU		3148 Jun 15 12:04	0°♄	
morning rise	3142 Mar 18 16:31	12°♄38'19		retrograde	3148 Sep 17 20:26	6°♄38'06	
retrograde	3142 Jun 30 09:09	20°♄01'17		opposition	3148 Nov 25 10:33	3°♄09'24	-2°-23'-5



min. Earth dist.	3148 Nov 25 08:53	3° $\Pi$ 09'44	8.22186 AU	conjunction	3154 Aug 12 04:14	19° $\Omega$ 59'37	0°37'03
	3149 Jan 14 14:05	30° $\mathbb{R}$ 8		minimum elong	3154 Aug 12 04:12	19° $\Omega$ 59'37	0°37'03
direct	3149 Jan 31 04:08	29° $\mathbb{B}$ 44'45		max. Earth dist.	3154 Aug 12 07:23	20° $\Omega$ 00'38	10.11321 AU
	3149 Feb 16 16:05	0° $\Pi$		morning rise	3154 Aug 30 05:56	22° $\Omega$ 18'34	
evening set	3149 May 13 01:45	7° $\Pi$ 36'51			3154 Nov 22 01:10	0° $\mathbb{M}$	
				retrograde	3154 Dec 11 21:10	0° $\mathbb{M}$ 21'53	
conjunction	3149 May 30 17:37	9° $\Pi$ 52'04	-1°-46'-38		3154 Dec 31 17:39	30° $\mathbb{R}$ $\Omega$	
minimum elong	3149 May 30 17:41	9° $\Pi$ 52'05	1°46'39	opposition	3155 Feb 16 12:12	26° $\Omega$ 55'17	1°04'49
max. Earth dist.	3149 May 30 20:33	9° $\Pi$ 53'00	10.18389 AU	min. Earth dist.	3155 Feb 16 09:42	26° $\Omega$ 55'48	8.13815 AU
morning rise	3149 Jun 17 13:27	12° $\Pi$ 08'33		direct	3155 Apr 25 03:00	23° $\Omega$ 26'18	
retrograde	3149 Oct 02 05:16	20° $\Pi$ 22'01			3155 Jul 26 21:30	0° $\mathbb{M}$	
opposition	3149 Dec 09 07:59	16° $\Pi$ 52'57	-1°-59'-53	evening set	3155 Aug 08 21:56	1° $\mathbb{M}$ 36'05	
min. Earth dist.	3149 Dec 09 05:19	16° $\Pi$ 53'29	8.15244 AU				
direct	3150 Feb 13 22:15	13° $\Pi$ 27'14		conjunction	3155 Aug 26 22:47	3° $\mathbb{M}$ 53'58	1°06'26
evening set	3150 May 27 11:52	21° $\Pi$ 25'45		minimum elong	3155 Aug 26 22:44	3° $\mathbb{M}$ 53'58	1°06'26
				max. Earth dist.	3155 Aug 27 01:26	3° $\mathbb{M}$ 54'49	10.16812 AU
conjunction	3150 Jun 14 08:22	23° $\Pi$ 43'09	-1°-24'-47	morning rise	3155 Sep 13 21:11	6° $\mathbb{M}$ 11'04	
minimum elong	3150 Jun 14 08:26	23° $\Pi$ 43'10	1°24'48	retrograde	3155 Dec 25 15:47	14° $\mathbb{M}$ 07'34	
max. Earth dist.	3150 Jun 14 12:51	23° $\Pi$ 44'36	10.12449 AU	opposition	3156 Mar 01 08:12	10° $\mathbb{M}$ 42'06	1°38'52
morning rise	3150 Jul 02 07:57	26° $\Pi$ 01'35		min. Earth dist.	3156 Mar 01 05:37	10° $\mathbb{M}$ 42'38	8.20358 AU
	3150 Aug 05 01:14	0° $\mathbb{S}$		direct	3156 May 08 11:26	7° $\mathbb{M}$ 13'14	
retrograde	3150 Oct 16 16:10	4° $\mathbb{S}$ 17'03		evening set	3156 Aug 22 13:10	15° $\mathbb{M}$ 19'57	
opposition	3150 Dec 23 08:08	0° $\mathbb{S}$ 47'53	-1°-29'-21				
min. Earth dist.	3150 Dec 23 04:23	0° $\mathbb{S}$ 48'39	8.10330 AU	conjunction	3156 Sep 09 10:39	17° $\mathbb{M}$ 35'43	1°31'39
	3151 Jan 02 04:11	30° $\mathbb{R}$ $\Pi$		minimum elong	3156 Sep 09 10:36	17° $\mathbb{M}$ 35'42	1°31'39
direct	3151 Feb 27 21:57	27° $\Pi$ 21'10		max. Earth dist.	3156 Sep 09 13:15	17° $\mathbb{M}$ 36'33	10.24266 AU
	3151 Apr 23 19:49	0° $\mathbb{S}$		morning rise	3156 Sep 27 04:43	19° $\mathbb{M}$ 50'26	
evening set	3151 Jun 11 04:34	5° $\mathbb{S}$ 24'57		retrograde	3157 Jan 07 04:39	27° $\mathbb{M}$ 39'17	
				opposition	3157 Mar 15 00:19	24° $\mathbb{M}$ 15'00	2°06'46
conjunction	3151 Jun 29 04:55	7° $\mathbb{S}$ 44'01	0°-57'-44	min. Earth dist.	3157 Mar 14 21:33	24° $\mathbb{M}$ 15'34	8.28668 AU
minimum elong	3151 Jun 29 04:58	7° $\mathbb{S}$ 44'02	0°57'45	direct	3157 May 22 15:16	20° $\mathbb{M}$ 46'31	
max. Earth dist.	3151 Jun 29 10:02	7° $\mathbb{S}$ 45'40	10.08678 AU	evening set	3157 Sep 05 20:37	28° $\mathbb{M}$ 48'25	
morning rise	3151 Jul 17 07:17	10° $\mathbb{S}$ 03'46			3157 Sep 15 10:15	0° $\mathbb{A}$	
retrograde	3151 Oct 31 03:15	18° $\mathbb{S}$ 18'58					
opposition	3152 Jan 06 09:49	14° $\mathbb{S}$ 50'01	0°-53'-12	conjunction	3157 Sep 23 13:59	1° $\mathbb{A}$ 01'42	1°51'25
min. Earth dist.	3152 Jan 06 05:49	14° $\mathbb{S}$ 50'51	8.07676 AU	minimum elong	3157 Sep 23 13:56	1° $\mathbb{A}$ 01'41	1°51'25
direct	3152 Mar 13 01:50	11° $\mathbb{S}$ 22'23		max. Earth dist.	3157 Sep 23 16:41	1° $\mathbb{A}$ 02'33	10.33254 AU
evening set	3152 Jun 25 01:59	19° $\mathbb{S}$ 30'05		morning rise	3157 Oct 11 03:12	3° $\mathbb{A}$ 13'42	
				retrograde	3158 Jan 20 11:34	10° $\mathbb{A}$ 54'31	
conjunction	3152 Jul 13 04:50	21° $\mathbb{S}$ 50'04	0°-27'-6	opposition	3158 Mar 28 11:42	7° $\mathbb{A}$ 31'25	2°27'12
minimum elong	3152 Jul 13 04:51	21° $\mathbb{S}$ 50'05	0°27'07	min. Earth dist.	3158 Mar 28 09:11	7° $\mathbb{A}$ 31'55	8.38255 AU
max. Earth dist.	3152 Jul 13 09:37	21° $\mathbb{S}$ 51'37	10.07211 AU	direct	3158 Jun 05 14:22	4° $\mathbb{A}$ 03'33	
morning rise	3152 Jul 31 08:32	24° $\mathbb{S}$ 10'22		evening set	3158 Sep 19 19:06	11° $\mathbb{A}$ 59'18	
	3152 Sep 22 03:39	0° $\Omega$					
retrograde	3152 Nov 13 13:06	2° $\Omega$ 23'16		conjunction	3158 Oct 07 08:03	14° $\mathbb{A}$ 09'54	2°04'56
	3153 Jan 06 02:02	30° $\mathbb{R}$ $\mathbb{S}$		minimum elong	3158 Oct 07 08:01	14° $\mathbb{A}$ 09'54	2°04'55
opposition	3153 Jan 19 11:46	28° $\mathbb{S}$ 54'52	0°-13'-43	max. Earth dist.	3158 Oct 07 10:27	14° $\mathbb{A}$ 10'39	10.43253 AU
min. Earth dist.	3153 Jan 19 08:13	28° $\mathbb{S}$ 55'36	8.07357 AU	morning rise	3158 Oct 24 16:23	16° $\mathbb{A}$ 19'08	
direct	3153 Mar 27 08:11	25° $\mathbb{S}$ 26'31		retrograde	3159 Feb 02 10:13	23° $\mathbb{A}$ 51'50	
asc. node	3153 May 28 10:37	28° $\mathbb{S}$ 43'29		opposition	3159 Apr 10 17:56	20° $\mathbb{A}$ 29'54	2°39'35
	3153 Jun 09 18:54	0° $\Omega$		min. Earth dist.	3159 Apr 10 16:32	20° $\mathbb{A}$ 30'11	8.48577 AU
evening set	3153 Jul 10 01:41	3° $\Omega$ 36'40		direct	3159 Jun 19 08:31	17° $\mathbb{A}$ 02'51	
				evening set	3159 Oct 03 07:41	24° $\mathbb{A}$ 51'31	
conjunction	3153 Jul 28 05:28	5° $\Omega$ 56'48	0°05'15				
minimum elong	3153 Jul 28 05:27	5° $\Omega$ 56'47	0°05'15	conjunction	3159 Oct 20 16:11	26° $\mathbb{A}$ 59'26	2°11'52
behind sun begin	3153 Jul 27 22:20	5° $\Omega$ 54'31		minimum elong	3159 Oct 20 16:10	26° $\mathbb{A}$ 59'26	2°11'52
behind sun end	3153 Jul 28 12:34	5° $\Omega$ 59'04		max. Earth dist.	3159 Oct 20 17:26	26° $\mathbb{A}$ 59'49	10.53721 AU
max. Earth dist.	3153 Jul 28 09:27	5° $\Omega$ 58'03	10.08084 AU	morning rise	3159 Nov 06 20:06	29° $\mathbb{A}$ 06'00	
morning rise	3153 Aug 15 08:57	8° $\Omega$ 16'49			3159 Nov 14 08:33	0° $\mathbb{M}$	
	3153 Oct 18 22:26	15° $\Omega$		retrograde	3160 Feb 15 01:46	6° $\mathbb{M}$ 30'59	
retrograde	3153 Nov 27 19:53	16° $\Omega$ 25'42		opposition	3160 Apr 22 19:11	3° $\mathbb{M}$ 10'09	2°43'48
	3154 Jan 07 02:04	15° $\mathbb{R}$ $\Omega$		min. Earth dist.	3160 Apr 22 18:51	3° $\mathbb{M}$ 10'13	8.59097 AU
opposition	3154 Feb 02 12:58	12° $\Omega$ 58'07	0°26'29		3160 Jun 14 00:49	30° $\mathbb{R}$ $\mathbb{A}$	
min. Earth dist.	3154 Feb 02 10:05	12° $\Omega$ 58'43	8.09412 AU	direct	3160 Jul 01 21:02	29° $\mathbb{A}$ 44'03	
direct	3154 Apr 10 17:11	9° $\Omega$ 29'18			3160 Jul 19 16:31	0° $\mathbb{M}$	
	3154 Jul 03 01:14	15° $\Omega$		evening set	3160 Oct 15 09:57	7° $\mathbb{M}$ 25'04	
evening set	3154 Jul 25 01:09	17° $\Omega$ 40'13					



conjunction	3160 Nov 01 14:24	9°♄30'30	2°12'20	evening set	3166 Dec 25 07:27	17°♄54'50	
minimum elong	3160 Nov 01 14:24	9°♄30'30	2°12'20				
max. Earth dist.	3160 Nov 01 14:17	9°♄30'28	10.64137 AU	conjunction	3167 Jan 10 23:55	19°♄52'22	0°32'15
morning rise	3160 Nov 18 14:36	11°♄34'39		minimum elong	3167 Jan 10 23:57	19°♄52'23	0°32'15
	3160 Dec 19 03:40	15°♄		max. Earth dist.	3167 Jan 10 21:08	19°♄51'33	11.02648 AU
retrograde	3161 Feb 26 11:44	18°♄52'36		morning rise	3167 Jan 27 15:24	21°♄49'40	
opposition	3161 May 05 15:21	15°♄32'43	2°40'15	retrograde	3167 May 08 06:31	28°♄50'47	
min. Earth dist.	3161 May 05 15:32	15°♄32'41	8.69304 AU	opposition	3167 Jul 17 16:53	25°♄32'51	0°23'34
	3161 May 12 18:05	15°♄		min. Earth dist.	3167 Jul 17 18:55	25°♄32'28	9.02921 AU
direct	3161 Jul 15 02:16	12°♄07'42		direct	3167 Sep 26 13:14	22°♄13'46	
	3161 Sep 13 23:19	15°♄		evening set	3168 Jan 05 17:37	29°♄16'28	
evening set	3161 Oct 28 02:39	19°♄40'58			3168 Jan 11 23:02	0°♄	
conjunction	3161 Nov 14 03:44	21°♄44'13	2°06'42	conjunction	3168 Jan 22 09:36	1°♄13'54	0°06'08
minimum elong	3161 Nov 14 03:46	21°♄44'14	2°06'42	minimum elong	3168 Jan 22 09:36	1°♄13'54	0°06'09
max. Earth dist.	3161 Nov 14 02:51	21°♄43'57	10.74018 AU	behind sun begin	3168 Jan 22 02:58	1°♄11'58	
morning rise	3161 Dec 01 00:53	23°♄46'17		behind sun end	3168 Jan 22 16:14	1°♄15'50	
	3162 Feb 05 02:04	0°♄		max. Earth dist.	3168 Jan 22 06:55	1°♄13'08	11.02668 AU
retrograde	3162 Mar 10 15:55	0°♄58'09		morning rise	3168 Feb 08 01:19	3°♄11'18	
	3162 Apr 13 23:20	30°♄		desc. node	3168 Apr 17 17:34	9°♄26'27	
opposition	3162 May 18 06:42	27°♄39'03	2°29'37	retrograde	3168 May 19 06:40	10°♄14'40	
min. Earth dist.	3162 May 18 06:50	27°♄39'02	8.78735 AU	opposition	3168 Jul 28 21:09	6°♄56'16	0°-8'-47
direct	3162 Jul 28 01:41	24°♄15'10		min. Earth dist.	3168 Jul 28 23:32	6°♄55'49	9.01899 AU
	3162 Oct 25 18:28	0°♄		direct	3168 Oct 07 11:11	3°♄37'39	
evening set	3162 Nov 09 10:43	1°♄41'03		evening set	3169 Jan 16 04:07	10°♄39'32	
conjunction	3162 Nov 26 09:07	3°♄42'27	1°55'35	conjunction	3169 Feb 01 19:48	12°♄37'10	0°-20'-23
minimum elong	3162 Nov 26 09:09	3°♄42'27	1°55'36	minimum elong	3169 Feb 01 19:48	12°♄37'10	0°20'24
max. Earth dist.	3162 Nov 26 08:21	3°♄42'12	10.82928 AU	max. Earth dist.	3169 Feb 01 16:09	12°♄36'06	11.00621 AU
morning rise	3162 Dec 13 03:49	5°♄42'47		morning rise	3169 Feb 18 12:17	14°♄35'03	
retrograde	3163 Mar 22 18:10	12°♄49'44			3169 Feb 22 02:47	15°♄	
opposition	3163 May 30 18:17	9°♄31'17	2°12'45	retrograde	3169 May 31 08:26	21°♄42'03	
min. Earth dist.	3163 May 30 18:52	9°♄31'11	8.86993 AU	opposition	3169 Aug 10 02:41	18°♄22'58	0°-40'-56
direct	3163 Aug 09 18:28	6°♄08'34		min. Earth dist.	3169 Aug 10 05:49	18°♄22'23	8.98842 AU
evening set	3163 Nov 21 11:16	13°♄27'39		direct	3169 Oct 19 08:04	15°♄04'36	
				evening set	3170 Jan 27 16:29	22°♄07'07	
conjunction	3163 Dec 08 07:29	15°♄27'33	1°39'44	conjunction	3170 Feb 13 08:17	24°♄05'16	0°-46'-11
minimum elong	3163 Dec 08 07:31	15°♄27'34	1°39'45	minimum elong	3170 Feb 13 08:15	24°♄05'15	0°46'12
max. Earth dist.	3163 Dec 08 06:16	15°♄27'11	10.90501 AU	max. Earth dist.	3170 Feb 13 04:27	24°♄04'08	10.96567 AU
morning rise	3163 Dec 25 00:28	17°♄26'33		morning rise	3170 Mar 02 01:43	26°♄03'55	
retrograde	3164 Apr 02 16:47	24°♄29'52			3170 Apr 08 01:23	0°♄	
opposition	3164 Jun 11 02:44	21°♄11'55	1°50'39	retrograde	3170 Jun 12 13:59	3°♄15'57	
min. Earth dist.	3164 Jun 11 04:19	21°♄11'37	8.93762 AU		3170 Aug 21 12:27	30°♄	
direct	3164 Aug 21 03:40	17°♄50'18		opposition	3170 Aug 22 10:15	29°♄55'57	-1°-11'-45
evening set	3164 Dec 02 05:58	25°♄03'31		min. Earth dist.	3170 Aug 22 13:11	29°♄55'24	8.93841 AU
				direct	3170 Oct 31 07:30	26°♄37'35	
conjunction	3164 Dec 19 00:24	27°♄02'16	1°19'59		3171 Jan 04 23:33	0°♄	
minimum elong	3164 Dec 19 00:26	27°♄02'16	1°19'59	evening set	3171 Feb 08 08:04	3°♄42'05	
max. Earth dist.	3164 Dec 18 21:55	27°♄01'31	10.96451 AU				
morning rise	3165 Jan 04 16:30	29°♄00'21		conjunction	3171 Feb 25 00:31	5°♄41'08	-1°-10'-21
	3165 Jan 13 08:35	0°♄		minimum elong	3171 Feb 25 00:29	5°♄41'07	1°10'22
retrograde	3165 Apr 14 12:16	6°♄01'26		max. Earth dist.	3171 Feb 24 21:30	5°♄40'14	10.90625 AU
opposition	3165 Jun 23 08:36	2°♄43'44	1°24'23	morning rise	3171 Mar 13 19:09	7°♄40'52	
min. Earth dist.	3165 Jun 23 11:07	2°♄43'16	8.98788 AU	retrograde	3171 Jun 25 02:32	14°♄59'09	
	3165 Aug 05 10:35	30°♄		opposition	3171 Sep 03 20:48	11°♄38'03	-1°-40'-3
direct	3165 Sep 02 10:48	29°♄23'05		min. Earth dist.	3171 Sep 03 23:01	11°♄37'38	8.87039 AU
	3165 Sep 30 02:47	0°♄		direct	3171 Nov 12 07:40	8°♄19'27	
evening set	3165 Dec 13 20:10	6°♄31'34		evening set	3172 Feb 20 04:21	15°♄27'18	
conjunction	3165 Dec 30 13:23	8°♄29'32	0°57'11	conjunction	3172 Mar 07 21:52	17°♄27'34	-1°-31'-53
minimum elong	3165 Dec 30 13:25	8°♄29'32	0°57'11	minimum elong	3172 Mar 07 21:50	17°♄27'33	1°31'54
max. Earth dist.	3165 Dec 30 10:04	8°♄28'33	11.00554 AU	max. Earth dist.	3172 Mar 07 19:09	17°♄26'45	10.82959 AU
morning rise	3166 Jan 16 05:04	10°♄27'02		morning rise	3172 Mar 24 18:11	19°♄28'44	
retrograde	3166 Apr 26 09:13	14°♄09'41	0°54'59	retrograde	3172 Jul 06 20:09	26°♄54'19	
opposition	3166 Jul 05 13:00	14°♄09'15	9.01877 AU	opposition	3172 Sep 15 11:04	23°♄31'59	-2°-4'-35
min. Earth dist.	3166 Jul 05 15:21	14°♄09'15	9.01877 AU	min. Earth dist.	3172 Sep 15 13:04	23°♄31'36	8.78614 AU
direct	3166 Sep 14 14:06	10°♄49'55					





























































































































direct	3172 Nov 23 09:54	20° <del>✕</del> 12'56		retrograde	3178 Sep 25 22:33	14° <del>II</del> 12'29	
evening set	3173 Mar 03 06:47	27° <del>✕</del> 25'31		opposition	3178 Dec 03 05:52	10° <del>II</del> 43'22	-2°-11'-43
				min. Earth dist.	3178 Dec 03 04:30	10° <del>II</del> 43'39	8.18500 AU
conjunction	3173 Mar 20 01:49	29° <del>✕</del> 27'21	-1°-49'-47	direct	3179 Feb 07 21:18	7° <del>II</del> 17'55	
minimum elong	3173 Mar 20 01:47	29° <del>✕</del> 27'20	1°49'48	evening set	3179 May 21 03:03	15° <del>II</del> 13'04	
max. Earth dist.	3173 Mar 19 22:16	29° <del>✕</del> 26'16	10.73799 AU				
	3173 Mar 24 13:07	0° <del>Y</del>		conjunction	3179 Jun 07 21:17	17° <del>II</del> 29'25	-1°-35'-45
morning rise	3173 Apr 06 00:26	1° <del>Y</del> 30'18		minimum elong	3179 Jun 07 21:21	17° <del>II</del> 29'27	1°35'46
retrograde	3173 Jul 19 20:13	9° <del>Y</del> 04'01		max. Earth dist.	3179 Jun 07 22:39	17° <del>II</del> 29'52	10.14875 AU
opposition	3173 Sep 28 05:39	5° <del>Y</del> 40'25	-2°-24'-9	morning rise	3179 Jun 25 19:14	19° <del>II</del> 46'58	
min. Earth dist.	3173 Sep 28 08:05	5° <del>Y</del> 39'57	8.68867 AU	retrograde	3179 Oct 10 07:28	28° <del>II</del> 01'29	
direct	3173 Dec 05 16:58	2° <del>Y</del> 20'40		opposition	3179 Dec 17 04:18	24° <del>II</del> 32'01	-1°-44'-32
evening set	3174 Mar 15 16:21	9° <del>Y</del> 39'10		min. Earth dist.	3179 Dec 17 02:47	24° <del>II</del> 32'19	8.11914 AU
				direct	3180 Feb 21 18:25	21° <del>II</del> 05'20	
conjunction	3174 Apr 01 13:39	11° <del>Y</del> 42'58	-2°-3'-5	evening set	3180 Jun 03 16:18	29° <del>II</del> 06'44	
minimum elong	3174 Apr 01 13:38	11° <del>Y</del> 42'57	2°03'06		3180 Jun 10 15:17	0° <del>☿</del>	
max. Earth dist.	3174 Apr 01 10:02	11° <del>Y</del> 41'51	10.63544 AU				
morning rise	3174 Apr 18 15:10	13° <del>Y</del> 48'02		conjunction	3180 Jun 21 14:49	1° <del>☿</del> 25'07	-1°-11'-1
retrograde	3174 Aug 02 03:04	21° <del>Y</del> 30'21		minimum elong	3180 Jun 21 14:52	1° <del>☿</del> 25'08	1°11'02
opposition	3174 Oct 11 05:23	18° <del>Y</del> 05'26	-2°-37'-33	max. Earth dist.	3180 Jun 21 16:54	1° <del>☿</del> 25'48	10.09400 AU
min. Earth dist.	3174 Oct 11 07:42	18° <del>Y</del> 04'59	8.58275 AU	morning rise	3180 Jul 09 16:11	3° <del>☿</del> 44'24	
direct	3174 Dec 18 04:58	14° <del>Y</del> 44'47		retrograde	3180 Oct 23 17:37	12° <del>☿</del> 00'08	
evening set	3175 Mar 28 09:55	22° <del>Y</del> 10'07		opposition	3180 Dec 30 05:09	8° <del>☿</del> 30'37	-1°-10'-49
				min. Earth dist.	3180 Dec 30 03:08	8° <del>☿</del> 31'02	8.07573 AU
conjunction	3175 Apr 14 10:24	24° <del>Y</del> 16'09	-2°-10'-51	direct	3181 Mar 06 20:39	5° <del>☿</del> 02'53	
minimum elong	3175 Apr 14 10:23	24° <del>Y</del> 16'09	2°10'51	evening set	3181 Jun 18 11:15	13° <del>☿</del> 09'11	
max. Earth dist.	3175 Apr 14 07:59	24° <del>Y</del> 15'24	10.52718 AU				
morning rise	3175 May 01 15:18	26° <del>Y</del> 23'36		conjunction	3181 Jul 06 13:03	15° <del>☿</del> 28'59	0°-41'-52
	3175 Jun 02 07:55	0° <del>♄</del>		minimum elong	3181 Jul 06 13:05	15° <del>☿</del> 29'00	0°41'53
retrograde	3175 Aug 15 15:57	4° <del>♄</del> 14'32		max. Earth dist.	3181 Jul 06 16:13	15° <del>☿</del> 30'00	10.06314 AU
opposition	3175 Oct 24 10:12	0° <del>♄</del> 48'17	-2°-43'-40	morning rise	3181 Jul 24 16:31	17° <del>☿</del> 49'17	
min. Earth dist.	3175 Oct 24 11:40	0° <del>♄</del> 48'00	8.47385 AU	retrograde	3181 Nov 07 03:41	26° <del>☿</del> 04'01	
	3175 Nov 03 19:05	30° <del>♄</del>		opposition	3182 Jan 13 07:08	22° <del>☿</del> 34'48	0°-32'-35
direct	3175 Dec 31 00:11	27° <del>Y</del> 26'34		min. Earth dist.	3182 Jan 13 04:15	22° <del>☿</del> 35'23	8.05745 AU
	3176 Feb 23 15:26	0° <del>♄</del>		direct	3182 Mar 21 02:03	19° <del>☿</del> 06'11	
evening set	3176 Apr 09 12:33	4° <del>♄</del> 59'19		evening set	3182 Jul 03 10:03	27° <del>☿</del> 15'52	
conjunction	3176 Apr 26 16:56	7° <del>♄</del> 07'54	-2°-12'-19	conjunction	3182 Jul 21 13:43	29° <del>☿</del> 36'14	0°-10'-7
minimum elong	3176 Apr 26 16:57	7° <del>♄</del> 07'54	2°12'20	minimum elong	3182 Jul 21 13:44	29° <del>☿</del> 36'14	0°10'09
max. Earth dist.	3176 Apr 26 16:08	7° <del>♄</del> 07'39	10.41875 AU	behind sun begin	3182 Jul 21 07:55	29° <del>☿</del> 34'22	
morning rise	3176 May 14 01:44	9° <del>♄</del> 17'55		behind sun end	3182 Jul 21 19:33	29° <del>☿</del> 38'07	
	3176 Jul 06 16:45	15° <del>♄</del>		max. Earth dist.	3182 Jul 21 17:49	29° <del>☿</del> 37'33	10.05815 AU
retrograde	3176 Aug 28 12:07	17° <del>♄</del> 16'50			3182 Jul 24 14:56	0° <del>♁</del>	
	3176 Oct 21 16:30	15° <del>♄</del>		morning rise	3182 Aug 08 17:42	1° <del>♁</del> 56'42	
opposition	3176 Nov 05 19:57	13° <del>♄</del> 49'24	-2°-41'-39	asc. node	3182 Nov 16 18:45	10° <del>♁</del> 07'04	
min. Earth dist.	3176 Nov 05 20:04	13° <del>♄</del> 49'22	8.36752 AU	retrograde	3182 Nov 21 12:20	10° <del>♁</del> 08'19	
direct	3177 Jan 12 01:11	10° <del>♄</del> 26'29		opposition	3183 Jan 27 08:50	6° <del>♁</del> 39'43	0°07'38
	3177 Mar 27 12:47	15° <del>♄</del>		min. Earth dist.	3183 Jan 27 05:13	6° <del>♁</del> 40'27	8.06552 AU
evening set	3177 Apr 23 00:27	18° <del>♄</del> 06'56		direct	3183 Apr 04 10:14	3° <del>♁</del> 10'30	
				evening set	3183 Jul 18 10:07	11° <del>♁</del> 21'47	
conjunction	3177 May 10 09:14	20° <del>♄</del> 18'12	-2°-7'00				
minimum elong	3177 May 10 09:16	20° <del>♄</del> 18'12	2°07'00	conjunction	3183 Aug 05 13:58	13° <del>♁</del> 41'51	0°22'15
max. Earth dist.	3177 May 10 09:27	20° <del>♄</del> 18'16	10.31587 AU	minimum elong	3183 Aug 05 13:57	13° <del>♁</del> 41'50	0°22'15
morning rise	3177 May 27 22:21	22° <del>♄</del> 30'52		max. Earth dist.	3183 Aug 05 18:39	13° <del>♁</del> 43'21	10.07931 AU
	3177 Aug 16 01:08	0° <del>II</del>			3183 Aug 15 15:52	15° <del>♁</del>	
retrograde	3177 Sep 11 15:28	0° <del>II</del> 36'42		morning rise	3183 Aug 23 16:45	16° <del>♁</del> 01'35	
	3177 Oct 08 06:55	30° <del>♄</del>		retrograde	3183 Dec 05 16:39	24° <del>♁</del> 08'17	
opposition	3177 Nov 19 10:44	27° <del>♄</del> 08'17	-2°-30'-59	opposition	3184 Feb 10 09:13	20° <del>♁</del> 40'34	0°47'12
min. Earth dist.	3177 Nov 19 09:53	27° <del>♄</del> 08'27	8.26941 AU	min. Earth dist.	3184 Feb 10 05:17	20° <del>♁</del> 41'23	8.09938 AU
direct	3178 Jan 25 07:01	23° <del>♄</del> 44'07		direct	3184 Apr 17 19:26	17° <del>♁</del> 11'05	
	3178 Apr 24 08:57	0° <del>II</del>		evening set	3184 Aug 01 08:35	25° <del>♁</del> 22'04	
evening set	3178 May 06 21:21	1° <del>II</del> 32'08					
				conjunction	3184 Aug 19 10:52	27° <del>♁</del> 40'56	0°53'02
conjunction	3178 May 24 10:51	3° <del>II</del> 46'03	-1°-54'-42	minimum elong	3184 Aug 19 10:50	27° <del>♁</del> 40'55	0°53'01
minimum elong	3178 May 24 10:54	3° <del>II</del> 46'04	1°54'42	max. Earth dist.	3184 Aug 19 15:39	27° <del>♁</del> 42'29	10.12525 AU
max. Earth dist.	3178 May 24 11:47	3° <del>II</del> 46'21	10.22416 AU	morning rise	3184 Sep 06 10:54	29° <del>♁</del> 59'08	
morning rise	3178 Jun 11 04:31	6° <del>II</del> 01'18			3184 Sep 06 13:38	0° <del>♃</del>	



retrograde	3184 Dec 18 15:26	7° $\mathring{M}$ 59'29		retrograde	3191 Mar 05 13:30	25° $\mathring{M}$ 42'25	
opposition	3185 Feb 23 07:04	4° $\mathring{M}$ 32'56	1°23'33	opposition	3191 May 12 21:42	22° $\mathring{M}$ 23'24	2°35'07
min. Earth dist.	3185 Feb 23 03:31	4° $\mathring{M}$ 33'40	8.15699 AU	min. Earth dist.	3191 May 12 21:43	22° $\mathring{M}$ 23'24	8.74899 AU
direct	3185 May 02 03:41	1° $\mathring{M}$ 03'31		direct	3191 Jul 22 11:32	18° $\mathring{M}$ 59'26	
evening set	3185 Aug 16 02:49	9° $\mathring{M}$ 12'16		evening set	3191 Nov 04 05:56	26° $\mathring{M}$ 28'59	
conjunction	3185 Sep 03 02:08	11° $\mathring{M}$ 29'15	1°20'24	conjunction	3191 Nov 21 05:28	28° $\mathring{M}$ 31'12	2°01'09
minimum elong	3185 Sep 03 02:05	11° $\mathring{M}$ 29'14	1°20'23	minimum elong	3191 Nov 21 05:30	28° $\mathring{M}$ 31'12	2°01'10
max. Earth dist.	3185 Sep 03 06:16	11° $\mathring{M}$ 30'35	10.19329 AU	max. Earth dist.	3191 Nov 21 04:44	28° $\mathring{M}$ 30'59	10.79455 AU
morning rise	3185 Sep 20 22:19	13° $\mathring{M}$ 45'17			3191 Dec 03 12:32	0° $\mathring{M}$	
retrograde	3186 Jan 01 08:05	21° $\mathring{M}$ 38'16		morning rise	3191 Dec 08 01:14	0° $\mathring{M}$ 32'18	
opposition	3186 Mar 09 01:17	18° $\mathring{M}$ 13'01	1°54'31	retrograde	3192 Mar 16 16:37	7° $\mathring{M}$ 41'36	
min. Earth dist.	3186 Mar 08 22:22	18° $\mathring{M}$ 13'37	8.23490 AU	opposition	3192 May 24 11:40	4° $\mathring{M}$ 23'20	2°20'58
direct	3186 May 16 09:12	14° $\mathring{M}$ 43'59		min. Earth dist.	3192 May 24 12:48	4° $\mathring{M}$ 23'08	8.83901 AU
evening set	3186 Aug 30 14:31	22° $\mathring{M}$ 48'45		direct	3192 Aug 03 08:16	1° $\mathring{M}$ 00'31	
				evening set	3192 Nov 15 10:18	8° $\mathring{M}$ 22'53	
conjunction	3186 Sep 17 09:54	25° $\mathring{M}$ 03'22	1°42'51	conjunction	3192 Dec 02 07:22	10° $\mathring{M}$ 23'26	1°47'21
minimum elong	3186 Sep 17 09:51	25° $\mathring{M}$ 03'21	1°42'50	minimum elong	3192 Dec 02 07:24	10° $\mathring{M}$ 23'27	1°47'22
max. Earth dist.	3186 Sep 17 13:04	25° $\mathring{M}$ 04'23	10.27934 AU	max. Earth dist.	3192 Dec 02 05:12	10° $\mathring{M}$ 22'47	10.87740 AU
morning rise	3186 Oct 05 01:34	27° $\mathring{M}$ 16'49		morning rise	3192 Dec 19 01:15	12° $\mathring{M}$ 23'02	
	3186 Oct 27 22:31	0° $\mathring{M}$		retrograde	3193 Mar 28 16:28	19° $\mathring{M}$ 28'05	
retrograde	3187 Jan 14 17:45	5° $\mathring{M}$ 01'50		opposition	3193 Jun 05 21:52	16° $\mathring{M}$ 10'21	2°01'07
opposition	3187 Mar 22 15:14	1° $\mathring{M}$ 37'59	2°18'33	min. Earth dist.	3193 Jun 05 23:27	16° $\mathring{M}$ 10'03	8.91333 AU
min. Earth dist.	3187 Mar 22 12:48	1° $\mathring{M}$ 38'28	8.32837 AU	direct	3193 Aug 15 22:12	12° $\mathring{M}$ 48'39	
	3187 Apr 12 20:46	30° $\mathring{R}$ $\mathring{M}$		evening set	3193 Nov 27 08:05	20° $\mathring{M}$ 04'44	
direct	3187 May 30 11:51	28° $\mathring{M}$ 09'38					
	3187 Jul 16 11:07	0° $\mathring{M}$		conjunction	3193 Dec 14 03:23	22° $\mathring{M}$ 04'01	1°29'15
evening set	3187 Sep 13 17:52	6° $\mathring{M}$ 08'53		minimum elong	3193 Dec 14 03:25	22° $\mathring{M}$ 04'02	1°29'15
conjunction	3187 Oct 01 08:49	8° $\mathring{M}$ 20'51	1°59'20	max. Earth dist.	3193 Dec 14 00:46	22° $\mathring{M}$ 03'14	10.94294 AU
minimum elong	3187 Oct 01 08:46	8° $\mathring{M}$ 20'50	1°59'20	morning rise	3193 Dec 30 19:52	24° $\mathring{M}$ 02'31	
max. Earth dist.	3187 Oct 01 11:10	8° $\mathring{M}$ 21'35	10.37831 AU		3194 Mar 04 12:04	0° $\mathring{M}$	
morning rise	3187 Oct 18 19:38	10° $\mathring{M}$ 31'30		retrograde	3194 Apr 09 14:50	1° $\mathring{M}$ 04'47	
retrograde	3188 Jan 27 19:22	18° $\mathring{M}$ 08'24			3194 May 16 14:35	30° $\mathring{R}$ $\mathring{M}$	
opposition	3188 Apr 04 00:19	14° $\mathring{M}$ 45'56	2°34'43	opposition	3194 Jun 18 05:12	27° $\mathring{M}$ 47'21	1°36'35
min. Earth dist.	3188 Apr 03 21:53	14° $\mathring{M}$ 46'25	8.43204 AU	min. Earth dist.	3194 Jun 18 07:16	27° $\mathring{M}$ 46'58	8.96906 AU
direct	3188 Jun 12 09:56	11° $\mathring{M}$ 18'31		direct	3194 Aug 28 07:43	24° $\mathring{M}$ 26'37	
evening set	3188 Sep 26 11:37	19° $\mathring{M}$ 11'03			3194 Nov 24 15:51	0° $\mathring{M}$	
				evening set	3194 Dec 09 00:51	1° $\mathring{M}$ 37'33	
conjunction	3188 Oct 13 22:10	21° $\mathring{M}$ 20'18	2°09'20	conjunction	3194 Dec 25 18:45	3° $\mathring{M}$ 35'55	1°07'42
minimum elong	3188 Oct 13 22:08	21° $\mathring{M}$ 20'17	2°09'20	minimum elong	3194 Dec 25 18:47	3° $\mathring{M}$ 35'56	1°07'42
max. Earth dist.	3188 Oct 14 00:18	21° $\mathring{M}$ 20'58	10.48482 AU	max. Earth dist.	3194 Dec 25 15:43	3° $\mathring{M}$ 35'01	10.98913 AU
morning rise	3188 Oct 31 04:16	23° $\mathring{M}$ 28'11		morning rise	3195 Jan 11 10:26	5° $\mathring{M}$ 33'42	
	3189 Jan 06 21:30	0° $\mathring{M}$		retrograde	3195 Apr 21 12:46	12° $\mathring{M}$ 34'40	
retrograde	3189 Feb 08 15:34	0° $\mathring{M}$ 57'10		opposition	3195 Jun 30 10:57	9° $\mathring{M}$ 17'16	1°08'27
	3189 Mar 13 23:06	30° $\mathring{R}$ $\mathring{M}$		min. Earth dist.	3195 Jun 30 14:00	9° $\mathring{M}$ 16'42	9.00495 AU
opposition	3189 Apr 17 04:24	27° $\mathring{M}$ 35'59	2°42'40	direct	3195 Sep 09 11:37	5° $\mathring{M}$ 57'20	
min. Earth dist.	3189 Apr 17 02:04	27° $\mathring{M}$ 36'26	8.54038 AU	evening set	3195 Dec 20 13:56	13° $\mathring{M}$ 04'13	
direct	3189 Jun 26 01:13	24° $\mathring{M}$ 09'40					
	3189 Sep 23 11:37	0° $\mathring{M}$		conjunction	3196 Jan 06 06:43	15° $\mathring{M}$ 02'01	0°43'36
evening set	3189 Oct 09 19:14	1° $\mathring{M}$ 54'42		minimum elong	3196 Jan 06 06:45	15° $\mathring{M}$ 02'02	0°43'36
conjunction	3189 Oct 27 01:44	4° $\mathring{M}$ 01'21	2°12'45	max. Earth dist.	3196 Jan 06 02:22	15° $\mathring{M}$ 00'44	11.01503 AU
minimum elong	3189 Oct 27 01:44	4° $\mathring{M}$ 01'21	2°12'45	morning rise	3196 Jan 22 22:16	16° $\mathring{M}$ 59'30	
max. Earth dist.	3189 Oct 27 03:50	4° $\mathring{M}$ 02'00	10.59331 AU	retrograde	3196 May 02 08:28	24° $\mathring{M}$ 00'37	
morning rise	3189 Nov 13 03:37	6° $\mathring{M}$ 06'39		opposition	3196 Jul 11 15:41	20° $\mathring{M}$ 42'55	0°37'46
retrograde	3190 Feb 21 06:27	13° $\mathring{M}$ 28'11		min. Earth dist.	3196 Jul 11 19:40	20° $\mathring{M}$ 42'11	9.02030 AU
opposition	3190 Apr 30 03:28	10° $\mathring{M}$ 08'10	2°42'37	direct	3196 Sep 20 12:36	17° $\mathring{M}$ 23'33	
min. Earth dist.	3190 Apr 30 02:02	10° $\mathring{M}$ 08'26	8.64780 AU	evening set	3196 Dec 31 01:03	24° $\mathring{M}$ 27'43	
direct	3190 Jul 09 08:40	6° $\mathring{M}$ 43'02					
evening set	3190 Oct 22 17:11	14° $\mathring{M}$ 20'15		conjunction	3197 Jan 16 17:10	26° $\mathring{M}$ 25'17	0°17'52
	3190 Oct 28 05:38	15° $\mathring{M}$		minimum elong	3197 Jan 16 17:11	26° $\mathring{M}$ 25'17	0°17'52
conjunction	3190 Nov 08 19:57	16° $\mathring{M}$ 24'32	2°09'51	max. Earth dist.	3197 Jan 16 12:13	26° $\mathring{M}$ 23'50	11.02013 AU
minimum elong	3190 Nov 08 19:58	16° $\mathring{M}$ 24'32	2°09'51	morning rise	3197 Feb 02 08:58	28° $\mathring{M}$ 22'45	
max. Earth dist.	3190 Nov 08 21:02	16° $\mathring{M}$ 24'52	10.69825 AU		3197 Feb 16 17:39	0° $\mathring{M}$	
morning rise	3190 Nov 25 18:19	18° $\mathring{M}$ 27'34		retrograde	3197 May 14 07:19	5° $\mathring{M}$ 25'30	
				opposition	3197 Jul 23 20:00	2° $\mathring{M}$ 07'15	0°05'40





























































































































min. Earth dist.	3197 Jul 23 23:59	2°  06'30	9.01481 AU	minimum elong	3203 Mar 27 10:23	6°  34'09	1°57'56
	3197 Aug 23 23:51	30°  3		max. Earth dist.	3203 Mar 27 08:27	6°  33'33	10.65927 AU
desc. node	3197 Sep 27 15:17	28°  49'25		morning rise	3203 Apr 13 10:31	8°  38'30	
direct	3197 Oct 02 13:50	28°  48'14		retrograde	3203 Jul 27 15:49	16°  17'50	
	3197 Nov 10 02:35	0° 		opposition	3203 Oct 05 21:20	12°  52'48	-2°-32'-38
evening set	3198 Jan 11 11:36	5°  51'00		min. Earth dist.	3203 Oct 05 22:17	12°  52'37	8.60925 AU
				direct	3203 Dec 13 02:28	9°  31'59	
conjunction	3198 Jan 28 03:32	7°  48'41	0°-8'-40	evening set	3204 Mar 22 04:19	16°  54'56	
minimum elong	3198 Jan 28 03:31	7°  48'41	0°08'41				
behind sun begin	3198 Jan 27 21:26	7°  46'54		conjunction	3204 Apr 08 03:25	19°  00'11	-2°-8'-13
behind sun end	3198 Jan 28 09:36	7°  50'28		minimum elong	3204 Apr 08 03:24	19°  00'10	2°08'14
max. Earth dist.	3198 Jan 27 23:11	7°  47'25	11.00434 AU	max. Earth dist.	3204 Apr 08 01:51	18°  59'41	10.55595 AU
morning rise	3198 Feb 13 19:42	9°  46'29		morning rise	3204 Apr 25 06:44	21°  06'45	
	3198 Apr 07 15:33	15° 		retrograde	3204 Aug 09 02:41	28°  54'38	
retrograde	3198 May 26 08:33	16°  52'19		opposition	3204 Oct 18 00:13	25°  28'25	-2°-42'-3
	3198 Jul 15 20:14	15° 		min. Earth dist.	3204 Oct 18 00:39	25°  28'20	8.50451 AU
opposition	3198 Aug 05 01:13	13°  33'14	0°-26'-45	direct	3204 Dec 24 17:52	22°  06'43	
min. Earth dist.	3198 Aug 05 04:28	13°  32'38	8.98876 AU	evening set	3205 Apr 04 03:18	29°  36'48	
direct	3198 Oct 14 11:33	10°  14'25			3205 Apr 07 06:44	0° 	
	3199 Jan 02 11:48	15° 					
evening set	3199 Jan 22 23:11	17°  17'11		conjunction	3205 Apr 21 05:45	1°  44'25	-2°-12'-31
				minimum elong	3205 Apr 21 05:45	1°  44'25	2°12'32
conjunction	3199 Feb 08 15:06	19°  15'16	0°-34'-53	max. Earth dist.	3205 Apr 21 04:27	1°  44'00	10.45077 AU
minimum elong	3199 Feb 08 15:05	19°  15'16	0°34'53	morning rise	3205 May 08 12:52	3°  53'28	
max. Earth dist.	3199 Feb 08 11:14	19°  14'07	10.96831 AU	retrograde	3205 Aug 22 20:15	11°  49'36	
morning rise	3199 Feb 25 08:00	21°  13'43		opposition	3205 Oct 31 08:20	8°  22'18	-2°-43'-38
retrograde	3199 Jun 07 13:27	28°  24'04		min. Earth dist.	3205 Oct 31 08:32	8°  22'15	8.40044 AU
opposition	3199 Aug 17 08:14	25°  04'01	0°-58'-22	direct	3206 Jan 06 16:19	4°  59'37	
min. Earth dist.	3199 Aug 17 11:22	25°  03'26	8.94323 AU	evening set	3206 Apr 17 11:24	12°  37'16	
direct	3199 Oct 26 09:40	21°  45'09					
evening set	3200 Feb 03 13:31	28°  49'21		conjunction	3206 May 04 18:03	14°  47'28	-2°-10'-10
	3200 Feb 13 12:25	0° 		minimum elong	3206 May 04 18:05	14°  47'28	2°10'11
				max. Earth dist.	3206 May 04 17:59	14°  47'27	10.34914 AU
conjunction	3200 Feb 20 05:41	0°  48'12	0°-59'-56		3206 May 06 09:40	15° 	
minimum elong	3200 Feb 20 05:39	0°  48'11	0°59'56	morning rise	3206 May 22 05:24	16°  59'08	
max. Earth dist.	3200 Feb 20 01:19	0°  46'53	10.91349 AU	retrograde	3206 Sep 05 20:29	25°  02'40	
morning rise	3200 Mar 07 23:50	2°  47'38		opposition	3206 Nov 13 21:35	21°  34'29	-2°-36'-42
retrograde	3200 Jun 18 23:18	10°  03'45		min. Earth dist.	3206 Nov 13 21:00	21°  34'36	8.30257 AU
opposition	3200 Aug 28 17:41	6°  42'35	-1°-28'00	direct	3207 Jan 19 21:07	18°  10'46	
min. Earth dist.	3200 Aug 28 21:08	6°  41'56	8.87993 AU	evening set	3207 May 01 04:47	25°  56'01	
direct	3200 Nov 06 08:37	3°  23'28					
evening set	3201 Feb 14 07:51	10°  30'32		conjunction	3207 May 18 16:13	28°  08'53	-2°00'-50
				minimum elong	3207 May 18 16:16	28°  08'54	2°00'51
conjunction	3201 Mar 03 00:49	12°  30'28	-1°-22'-47	max. Earth dist.	3207 May 18 17:54	28°  09'25	10.25652 AU
minimum elong	3201 Mar 03 00:46	12°  30'27	1°22'49		3207 Jun 02 06:08	0° 	
max. Earth dist.	3201 Mar 02 20:23	12°  29'08	10.84187 AU	morning rise	3207 Jun 05 08:01	0°  23'09	
morning rise	3201 Mar 19 20:34	14°  31'13		retrograde	3207 Sep 20 01:53	8°  32'41	
retrograde	3201 Jul 01 12:41	21°  54'16		opposition	3207 Nov 27 15:25	5°  03'54	-2°-21'-2
opposition	3201 Sep 10 06:35	18°  31'51	-1°-54'-24	min. Earth dist.	3207 Nov 27 13:36	5°  04'15	8.21626 AU
min. Earth dist.	3201 Sep 10 09:50	18°  31'14	8.80105 AU	direct	3208 Feb 02 09:18	1°  39'07	
direct	3201 Nov 18 11:00	15°  12'19		evening set	3208 May 14 07:23	9°  31'39	
evening set	3202 Feb 26 07:31	22°  23'35					
				conjunction	3208 May 31 23:42	11°  47'03	-1°-44'-39
conjunction	3202 Mar 15 01:55	24°  24'56	-1°-42'-27	minimum elong	3208 May 31 23:45	11°  47'04	1°44'40
minimum elong	3202 Mar 15 01:52	24°  24'56	1°42'29	max. Earth dist.	3208 Jun 01 02:59	11°  48'06	10.17814 AU
max. Earth dist.	3202 Mar 14 22:49	24°  24'00	10.75597 AU	morning rise	3208 Jun 18 19:44	14°  03'41	
morning rise	3202 Mar 31 23:33	26°  27'19		retrograde	3208 Oct 03 10:50	22°  17'23	
	3202 May 02 23:26	0° 		opposition	3208 Dec 10 12:58	18°  48'16	-1°-57'-4
retrograde	3202 Jul 14 10:03	3°  58'15		min. Earth dist.	3208 Dec 10 09:58	18°  48'53	8.14657 AU
opposition	3202 Sep 22 23:36	0°  34'31	-2°-16'-22	direct	3209 Feb 15 03:23	15°  22'28	
min. Earth dist.	3202 Sep 23 01:38	0°  34'07	8.70956 AU	evening set	3209 May 28 18:06	23°  21'29	
	3202 Sep 30 13:26	30° 					
direct	3202 Nov 30 17:34	27°  14'25		conjunction	3209 Jun 15 14:55	25°  39'05	-1°-22'-14
	3203 Jan 27 12:57	0° 		minimum elong	3209 Jun 15 14:58	25°  39'06	1°22'14
evening set	3203 Mar 10 13:59	4°  31'01		max. Earth dist.	3209 Jun 15 19:19	25°  40'31	10.11873 AU
				morning rise	3209 Jul 03 14:41	27°  15'40	
conjunction	3203 Mar 27 10:25	6°  34'10	-1°-57'-55		3209 Jul 20 04:14	0° 	



retrograde	3209 Oct 17 22:32	6°♊13'23		direct	3215 May 10 17:11	9°♎11'32	
opposition	3209 Dec 24 13:29	2°♊44'13	-1°-25'-53	evening set	3215 Aug 24 20:34	17°♎18'17	
min. Earth dist.	3209 Dec 24 09:44	2°♊44'59	8.09776 AU				
	3210 Feb 01 06:25	30°♋II		conjunction	3215 Sep 11 17:50	19°♎34'00	1°33'57
direct	3210 Mar 01 02:35	29°♋II17'26		minimum elong	3215 Sep 11 17:47	19°♎33'59	1°33'56
	3210 Mar 28 19:17	0°♊		max. Earth dist.	3215 Sep 11 21:04	19°♎35'01	10.24507 AU
evening set	3210 Jun 12 11:18	7°♊21'45		morning rise	3215 Sep 29 11:28	21°♎48'34	
				retrograde	3216 Jan 09 12:11	29°♎37'16	
conjunction	3210 Jun 30 11:48	9°♊40'59	0°-54'-45	opposition	3216 Mar 16 06:26	26°♎13'05	2°09'14
minimum elong	3210 Jun 30 11:51	9°♊41'00	0°54'45	min. Earth dist.	3216 Mar 16 03:39	26°♎13'38	8.28934 AU
max. Earth dist.	3210 Jun 30 16:28	9°♊42'30	10.08179 AU	direct	3216 May 23 20:49	22°♎44'41	
morning rise	3210 Jul 18 14:21	12°♊00'52			3216 Aug 31 19:37	0°♎	
retrograde	3210 Nov 01 10:29	20°♊16'17		evening set	3216 Sep 07 03:53	0°♎46'36	
opposition	3211 Jan 07 15:34	16°♊47'23	0°-49'-17				
min. Earth dist.	3211 Jan 07 11:56	16°♊48'08	8.07250 AU	conjunction	3216 Sep 24 20:55	2°♎59'46	1°53'05
direct	3211 Mar 15 06:32	13°♊19'41		minimum elong	3216 Sep 24 20:52	2°♎59'45	1°53'05
evening set	3211 Jun 27 09:15	21°♊27'53		max. Earth dist.	3216 Sep 24 23:52	3°♎00'42	10.33539 AU
				morning rise	3216 Oct 12 09:41	5°♎11'39	
conjunction	3211 Jul 15 12:09	23°♊47'59	0°-23'-51	retrograde	3217 Jan 21 17:26	12°♎52'17	
minimum elong	3211 Jul 15 12:10	23°♊47'59	0°23'52	opposition	3217 Mar 29 17:57	9°♎29'19	2°28'51
max. Earth dist.	3211 Jul 15 16:19	23°♊49'20	10.06892 AU	min. Earth dist.	3217 Mar 29 15:58	9°♎29'42	8.38566 AU
morning rise	3211 Aug 02 16:00	26°♊08'22		direct	3217 Jun 06 21:13	6°♎01'32	
	3211 Sep 04 04:31	0°♋		evening set	3217 Sep 21 02:04	13°♎57'13	
retrograde	3211 Nov 15 20:27	4°♋21'18					
opposition	3212 Jan 21 17:44	0°♋52'57	0°-9'-36	conjunction	3217 Oct 08 14:35	16°♎07'42	2°05'54
min. Earth dist.	3212 Jan 21 14:39	0°♋53'35	8.07150 AU	minimum elong	3217 Oct 08 14:34	16°♎07'41	2°05'54
	3212 Feb 01 13:33	30°♋♊		max. Earth dist.	3217 Oct 08 16:34	16°♎08'19	10.43580 AU
direct	3212 Mar 28 14:51	27°♋24'32		morning rise	3217 Oct 25 22:39	18°♎16'49	
asc. node	3212 Apr 21 00:55	27°♋54'48		retrograde	3218 Feb 03 15:44	25°♎49'20	
	3212 May 22 06:26	0°♋		opposition	3218 Apr 12 00:13	22°♎27'32	2°40'20
evening set	3212 Jul 11 09:18	5°♋35'03		min. Earth dist.	3218 Apr 11 23:19	22°♎27'43	8.48929 AU
				direct	3218 Jun 20 15:33	19°♎00'34	
conjunction	3212 Jul 29 13:01	7°♋55'11	0°08'32	evening set	3218 Oct 04 14:17	26°♎49'05	
minimum elong	3212 Jul 29 13:01	7°♋55'11	0°08'32				
behind sun begin	3212 Jul 29 06:38	7°♋53'08		conjunction	3218 Oct 21 22:25	28°♎56'54	2°12'08
behind sun end	3212 Jul 29 19:24	7°♋57'14		minimum elong	3218 Oct 21 22:25	28°♎56'54	2°12'08
max. Earth dist.	3212 Jul 29 16:26	7°♋56'16	10.07987 AU	max. Earth dist.	3218 Oct 21 22:56	28°♎57'04	10.54085 AU
morning rise	3212 Aug 16 16:31	10°♋15'13			3218 Oct 30 10:47	0°♌	
	3212 Sep 26 21:27	15°♋		morning rise	3218 Nov 08 02:12	1°♌03'22	
retrograde	3212 Nov 29 01:29	18°♋23'57		retrograde	3219 Feb 16 07:37	8°♌28'10	
opposition	3213 Feb 03 19:02	14°♋56'27	0°30'32	opposition	3219 Apr 25 01:24	5°♌07'25	2°43'40
	3213 Feb 03 01:45	15°♋♋		min. Earth dist.	3219 Apr 25 00:53	5°♌07'31	8.59473 AU
min. Earth dist.	3213 Feb 03 16:21	14°♋57'00	8.09407 AU	direct	3219 Jul 04 03:29	1°♌41'25	
direct	3213 Apr 12 01:03	11°♋27'37		evening set	3219 Oct 17 16:11	9°♌22'12	
	3213 Jun 16 00:55	15°♋					
evening set	3213 Jul 26 08:44	19°♋38'44		conjunction	3219 Nov 03 20:26	11°♌27'32	2°11'52
				minimum elong	3219 Nov 03 20:26	11°♌27'32	2°11'53
conjunction	3213 Aug 13 11:41	21°♋58'06	0°40'11	max. Earth dist.	3219 Nov 03 20:23	11°♌27'31	10.64519 AU
minimum elong	3213 Aug 13 11:39	21°♋58'05	0°40'11	morning rise	3219 Nov 20 20:27	13°♌31'36	
max. Earth dist.	3213 Aug 13 14:41	21°♋59'04	10.11388 AU		3219 Dec 03 09:40	15°♌	
morning rise	3213 Aug 31 13:12	24°♋16'58		retrograde	3220 Feb 28 16:37	20°♌49'22	
	3213 Oct 22 14:08	0°♎		opposition	3220 May 06 21:30	17°♌29'32	2°39'16
retrograde	3213 Dec 13 02:11	2°♎20'08		min. Earth dist.	3220 May 06 20:59	17°♌29'38	8.69683 AU
	3214 Feb 03 23:49	30°♋♋			3220 Jun 12 08:46	15°♋♌	
opposition	3214 Feb 17 18:15	28°♋53'37	1°08'32	direct	3220 Jul 16 09:40	14°♌04'37	
min. Earth dist.	3214 Feb 17 15:26	28°♋54'12	8.13943 AU		3220 Aug 19 01:17	15°♌	
direct	3214 Apr 26 10:20	25°♋24'40		evening set	3220 Oct 29 08:27	21°♌37'34	
	3214 Jul 10 23:11	0°♎					
evening set	3214 Aug 10 05:24	3°♎34'33		conjunction	3220 Nov 15 09:27	23°♌40'44	2°05'34
				minimum elong	3220 Nov 15 09:29	23°♌40'44	2°05'35
conjunction	3214 Aug 28 06:07	5°♎52'23	1°09'14	max. Earth dist.	3220 Nov 15 09:27	23°♌40'44	10.74400 AU
minimum elong	3214 Aug 28 06:04	5°♎52'22	1°09'13	morning rise	3220 Dec 02 06:21	25°♌42'42	
max. Earth dist.	3214 Aug 28 09:11	5°♎53'22	10.16985 AU		3221 Jan 11 06:19	0°♏	
morning rise	3214 Sep 15 04:11	8°♎09'22		retrograde	3221 Mar 11 22:34	2°♏54'24	
retrograde	3214 Dec 26 22:04	16°♎05'43			3221 May 14 02:58	30°♋♌	
opposition	3215 Mar 03 14:15	12°♎40'20	1°42'03	opposition	3221 May 19 12:55	29°♌35'20	2°27'51
min. Earth dist.	3215 Mar 03 11:12	12°♎40'57	8.20570 AU	min. Earth dist.	3221 May 19 12:43	29°♌35'22	8.79107 AU



direct	3221 Jul 29 08:10	26°  11'32		min. Earth dist.	3227 Jul 31 05:11	8°  48'12	9.02030 AU
	3221 Oct 08 13:03	0°  37'00		direct	3227 Oct 09 15:07	5°  30'07	
evening set	3221 Nov 10 16:04	3°  37'00		evening set	3228 Jan 18 07:50	12°  31'46	
conjunction	3221 Nov 27 14:23	5°  38'20	1°53'52	conjunction	3228 Feb 03 23:29	14°  29'22	0°-23'-27
minimum elong	3221 Nov 27 14:25	5°  38'20	1°53'52	minimum elong	3228 Feb 03 23:28	14°  29'21	0°23'27
max. Earth dist.	3221 Nov 27 14:06	5°  38'15	10.83298 AU	max. Earth dist.	3228 Feb 03 19:46	14°  28'16	11.00723 AU
morning rise	3221 Dec 14 08:58	7°  38'36			3228 Feb 08 06:52	15° 	
retrograde	3222 Mar 23 23:56	14°  45'20		morning rise	3228 Feb 20 16:03	16°  27'14	
opposition	3222 Jun 01 00:25	11°  26'54	2°10'18	retrograde	3228 Jun 01 12:12	23°  34'19	
min. Earth dist.	3222 Jun 01 01:22	11°  26'43	8.87352 AU	opposition	3228 Aug 11 07:45	20°  15'09	0°-44'-35
direct	3222 Aug 10 23:20	8°  04'14		min. Earth dist.	3228 Aug 11 10:36	20°  14'38	8.98914 AU
evening set	3222 Nov 22 16:21	15°  22'54		direct	3228 Oct 20 13:47	16°  56'47	
				evening set	3229 Jan 28 20:07	23°  59'08	
conjunction	3222 Dec 09 12:23	17°  22'43	1°37'30	conjunction	3229 Feb 14 12:02	25°  57'18	0°-49'-3
minimum elong	3222 Dec 09 12:25	17°  22'44	1°37'30	minimum elong	3229 Feb 14 12:01	25°  57'17	0°49'04
max. Earth dist.	3222 Dec 09 10:43	17°  22'13	10.90848 AU	max. Earth dist.	3229 Feb 14 09:04	25°  56'25	10.96608 AU
morning rise	3222 Dec 26 05:25	19°  21'41		morning rise	3229 Mar 03 05:28	27°  55'56	
retrograde	3223 Apr 04 20:43	26°  24'48			3229 Mar 21 14:38	0° 	
opposition	3223 Jun 13 08:39	23°  20'49	1°47'39	retrograde	3229 Jun 13 19:53	5°  08'06	
min. Earth dist.	3223 Jun 13 10:28	23°  20'29	8.94094 AU	opposition	3229 Aug 23 15:02	1°  48'02	-1°-15'-6
direct	3223 Aug 23 10:26	19°  24'51		min. Earth dist.	3229 Aug 23 17:11	1°  47'38	8.93858 AU
evening set	3223 Dec 04 10:39	26°  25'01			3229 Sep 18 05:00	30° 	
				direct	3229 Nov 01 12:02	28°  29'43	
conjunction	3223 Dec 21 04:59	28°  25'42	1°17'21		3229 Dec 14 08:18	0° 	
minimum elong	3223 Dec 21 05:01	28°  25'43	1°17'21	evening set	3230 Feb 09 11:49	5°  34'08	
max. Earth dist.	3223 Dec 21 02:23	28°  25'55	10.96770 AU				
	3223 Dec 30 02:27	0° 		conjunction	3230 Feb 26 04:19	7°  33'10	-1°-12'-55
morning rise	3224 Jan 06 21:09	0°  54'44		minimum elong	3230 Feb 26 04:17	7°  33'10	1°12'56
retrograde	3224 Apr 15 17:34	7°  55'41		max. Earth dist.	3230 Feb 26 01:48	7°  32'25	10.90617 AU
opposition	3224 Jun 24 14:23	4°  37'54	1°20'57	morning rise	3230 Mar 14 22:58	9°  32'55	
min. Earth dist.	3224 Jun 24 16:15	4°  37'34	8.99085 AU	retrograde	3230 Jun 26 07:17	16°  51'22	
direct	3224 Sep 03 17:15	1°  17'17		opposition	3230 Sep 05 01:33	13°  30'14	-1°-42'-57
evening set	3224 Dec 15 00:23	8°  25'19		min. Earth dist.	3230 Sep 05 03:23	13°  29'53	8.87022 AU
				direct	3230 Nov 13 11:02	10°  11'41	
conjunction	3224 Dec 31 17:40	10°  23'15	0°54'16	evening set	3231 Feb 21 08:11	17°  19'31	
minimum elong	3224 Dec 31 17:42	10°  23'15	0°54'16				
max. Earth dist.	3224 Dec 31 15:18	10°  22'33	11.00831 AU	conjunction	3231 Mar 10 01:39	19°  19'47	-1°-34'-2
morning rise	3225 Jan 17 09:18	12°  20'43		minimum elong	3231 Mar 10 01:36	19°  19'46	1°34'03
retrograde	3225 Apr 27 13:57	19°  20'58		max. Earth dist.	3231 Mar 09 22:32	19°  18'51	10.82942 AU
opposition	3225 Jul 06 18:33	16°  03'11	0°51'17	morning rise	3231 Mar 26 22:07	21°  20'58	
min. Earth dist.	3225 Jul 06 20:06	16°  02'53	9.02125 AU	retrograde	3231 Jul 09 01:05	28°  46'44	
direct	3225 Sep 15 19:12	12°  43'26		opposition	3231 Sep 17 15:52	25°  24'23	-2°-6'-56
evening set	3225 Dec 26 11:30	19°  47'58		min. Earth dist.	3231 Sep 17 18:11	25°  23'57	8.78614 AU
				direct	3231 Nov 25 14:12	22°  10'52	
conjunction	3226 Jan 12 04:00	21°  45'27	0°29'10	evening set	3232 Mar 04 10:41	20° 	
minimum elong	3226 Jan 12 04:01	21°  45'27	0°29'10		3232 Mar 10 07:01	0° 	
max. Earth dist.	3226 Jan 12 01:43	21°  44'47	11.02870 AU	conjunction	3232 Mar 21 05:46	1°  19'46	-1°-51'-26
morning rise	3226 Jan 28 19:28	23°  42'42		minimum elong	3232 Mar 21 05:44	1°  19'45	1°51'27
	3226 Apr 09 13:10	0° 		max. Earth dist.	3232 Mar 21 02:07	1°  18'39	10.73817 AU
retrograde	3226 May 09 12:13	0°  43'45		morning rise	3232 Apr 07 04:36	3°  12'45	
	3226 Jun 08 22:19	30° 		retrograde	3232 Jul 21 00:54	10°  56'36	
opposition	3226 Jul 18 22:11	27°  25'45	0°19'44	opposition	3232 Sep 29 10:20	7°  32'59	-2°-25'-49
min. Earth dist.	3226 Jul 19 00:17	27°  25'22	9.03112 AU	min. Earth dist.	3232 Sep 29 13:04	7°  32'28	8.68898 AU
direct	3226 Sep 27 18:22	24°  06'41		direct	3232 Dec 06 20:43	4°  13'15	
	3226 Dec 27 18:26	0° 		evening set	3233 Mar 16 20:20	11°  31'47	
evening set	3227 Jan 06 21:33	1°  09'04					
				conjunction	3233 Apr 02 17:53	13°  35'35	-2°-4'-7
conjunction	3227 Jan 23 13:25	3°  06'27	0°03'00	minimum elong	3233 Apr 02 17:51	13°  35'34	2°04'08
minimum elong	3227 Jan 23 13:25	3°  06'27	0°03'01	max. Earth dist.	3233 Apr 02 14:50	13°  34'39	10.63570 AU
behind sun begin	3227 Jan 23 06:28	3°  04'25		morning rise	3233 Apr 19 19:31	15°  40'41	
behind sun end	3227 Jan 23 20:22	3°  08'29		retrograde	3233 Aug 03 06:41	23°  23'08	
max. Earth dist.	3227 Jan 23 10:15	3°  05'34	11.02830 AU	opposition	3233 Oct 12 09:52	19°  58'12	-2°-38'-25
morning rise	3227 Feb 09 05:16	5°  03'51		min. Earth dist.	3233 Oct 12 11:58	19°  57'48	8.58294 AU
desc. node	3227 Mar 06 09:39	7°  49'31		direct	3233 Dec 19 10:09	16°  37'35	
retrograde	3227 May 21 10:29	12°  07'10					
opposition	3227 Jul 31 02:23	8°  48'43	0°-12'-35				



evening set	3234 Mar 29 14:07	24° $\Upsilon$ 02'59		opposition	3240 Jan 01 09:52	10° $\Theta$ 25'51	-1°-7'-9
				min. Earth dist.	3240 Jan 01 07:34	10° $\Theta$ 26'20	8.07521 AU
conjunction	3234 Apr 15 14:51	26° $\Upsilon$ 09'05	-2°-11'-13	direct	3240 Mar 08 01:18	6° $\Theta$ 58'05	
minimum elong	3234 Apr 15 14:50	26° $\Upsilon$ 09'05	2°11'14	evening set	3240 Jun 19 17:21	15° $\Theta$ 04'36	
max. Earth dist.	3234 Apr 15 13:04	26° $\Upsilon$ 08'32	10.52711 AU				
morning rise	3234 May 02 19:50	28° $\Upsilon$ 16'34		conjunction	3240 Jul 07 19:24	17° $\Theta$ 24'26	0°-38'-47
	3234 May 17 08:05	0° $\mathcal{B}$		minimum elong	3240 Jul 07 19:26	17° $\Theta$ 24'27	0°38'48
retrograde	3234 Aug 16 21:17	6° $\mathcal{B}$ 07'38		max. Earth dist.	3240 Jul 07 23:02	17° $\Theta$ 25'37	10.06288 AU
opposition	3234 Oct 25 14:38	2° $\mathcal{B}$ 41'24	-2°-43'-42	morning rise	3240 Jul 25 22:50	19° $\Theta$ 44'46	
min. Earth dist.	3234 Oct 25 15:33	2° $\mathcal{B}$ 41'14	8.47360 AU	retrograde	3240 Nov 08 09:38	27° $\Theta$ 59'19	
	3234 Dec 04 10:59	30° $\mathcal{R}$ $\Upsilon$		opposition	3241 Jan 14 11:49	24° $\Theta$ 30'08	0°-28'-39
direct	3235 Jan 01 04:19	29° $\Upsilon$ 19'44		min. Earth dist.	3241 Jan 14 08:38	24° $\Theta$ 30'48	8.05744 AU
	3235 Jan 28 11:46	0° $\mathcal{B}$		direct	3241 Mar 22 07:09	21° $\Theta$ 01'30	
evening set	3235 Apr 11 17:00	6° $\mathcal{B}$ 52'35		evening set	3241 Jul 04 16:22	29° $\Theta$ 11'22	
					3241 Jul 11 00:33	0° $\mathcal{Q}$	
conjunction	3235 Apr 28 21:35	9° $\mathcal{B}$ 01'14	-2°-12'00	conjunction	3241 Jul 22 20:05	1° $\mathcal{Q}$ 31'43	0°-6'-56
minimum elong	3235 Apr 28 21:35	9° $\mathcal{B}$ 01'14	2°12'01	minimum elong	3241 Jul 22 20:06	1° $\mathcal{Q}$ 31'44	0°06'57
max. Earth dist.	3235 Apr 28 20:36	9° $\mathcal{B}$ 00'55	10.41828 AU	behind sun begin	3241 Jul 22 13:18	1° $\mathcal{Q}$ 29'33	
morning rise	3235 May 16 06:35	11° $\mathcal{B}$ 11'20		behind sun end	3241 Jul 23 02:54	1° $\mathcal{Q}$ 33'55	
	3235 Jun 18 12:57	15° $\mathcal{B}$		max. Earth dist.	3241 Jul 23 00:23	1° $\mathcal{Q}$ 33'05	10.05844 AU
retrograde	3235 Aug 30 18:43	19° $\mathcal{B}$ 10'21		morning rise	3241 Aug 09 23:56	3° $\mathcal{Q}$ 52'10	
opposition	3235 Nov 08 00:29	15° $\mathcal{B}$ 42'58	-2°-40'-48	asc. node	3241 Oct 11 13:01	10° $\mathcal{Q}$ 28'00	
min. Earth dist.	3235 Nov 08 00:35	15° $\mathcal{B}$ 42'57	8.36685 AU	retrograde	3241 Nov 22 17:38	12° $\mathcal{Q}$ 03'34	
	3235 Nov 17 02:42	15° $\mathcal{R}$ $\mathcal{B}$		opposition	3242 Jan 28 13:38	8° $\mathcal{Q}$ 35'00	0°11'36
direct	3236 Jan 14 03:52	12° $\mathcal{B}$ 20'05		min. Earth dist.	3242 Jan 28 10:06	8° $\mathcal{Q}$ 35'43	8.06613 AU
	3236 Mar 09 17:53	15° $\mathcal{B}$		direct	3242 Apr 05 15:23	5° $\mathcal{Q}$ 05'45	
evening set	3236 Apr 24 05:14	20° $\mathcal{B}$ 00'41		evening set	3242 Jul 19 16:25	13° $\mathcal{Q}$ 17'08	
					3242 Aug 02 01:17	15° $\mathcal{Q}$	
conjunction	3236 May 11 14:13	22° $\mathcal{B}$ 12'01	-2°-5'-58	conjunction	3242 Aug 06 20:09	15° $\mathcal{Q}$ 37'09	0°25'23
minimum elong	3236 May 11 14:15	22° $\mathcal{B}$ 12'02	2°05'59	minimum elong	3242 Aug 06 20:08	15° $\mathcal{Q}$ 37'09	0°25'22
max. Earth dist.	3236 May 11 13:32	22° $\mathcal{B}$ 11'48	10.31509 AU	max. Earth dist.	3242 Aug 07 00:31	15° $\mathcal{Q}$ 38'34	10.08024 AU
morning rise	3236 May 29 03:43	24° $\mathcal{B}$ 24'48		morning rise	3242 Aug 24 22:46	17° $\mathcal{Q}$ 56'50	
	3236 Jul 19 15:00	0° $\mathcal{I}$		retrograde	3242 Dec 06 21:47	26° $\mathcal{Q}$ 03'15	
retrograde	3236 Sep 12 21:13	2° $\mathcal{I}$ 30'40		opposition	3243 Feb 11 14:03	22° $\mathcal{Q}$ 35'36	0°50'57
	3236 Nov 08 12:07	30° $\mathcal{R}$ $\mathcal{B}$		min. Earth dist.	3243 Feb 11 10:45	22° $\mathcal{Q}$ 36'16	8.10066 AU
opposition	3236 Nov 20 15:20	29° $\mathcal{B}$ 02'20	-2°-29'-17	direct	3243 Apr 20 00:18	19° $\mathcal{Q}$ 06'03	
min. Earth dist.	3236 Nov 20 15:08	29° $\mathcal{B}$ 02'22	8.26845 AU	evening set	3243 Aug 03 14:54	27° $\mathcal{Q}$ 17'04	
direct	3237 Jan 26 11:27	25° $\mathcal{B}$ 38'09					
	3237 Apr 08 21:58	0° $\mathcal{I}$		conjunction	3243 Aug 21 16:55	29° $\mathcal{Q}$ 35'52	0°55'54
evening set	3237 May 08 02:31	3° $\mathcal{I}$ 26'25		minimum elong	3243 Aug 21 16:52	29° $\mathcal{Q}$ 35'51	0°55'53
				max. Earth dist.	3243 Aug 21 20:45	29° $\mathcal{Q}$ 37'06	10.12680 AU
conjunction	3237 May 25 16:15	5° $\mathcal{I}$ 40'25	-1°-53'00		3243 Aug 24 19:54	0° $\mathcal{M}$	
minimum elong	3237 May 25 16:18	5° $\mathcal{I}$ 40'26	1°53'00	morning rise	3243 Sep 08 16:46	1° $\mathcal{M}$ 53'58	
max. Earth dist.	3237 May 25 16:15	5° $\mathcal{I}$ 40'25	10.22317 AU	retrograde	3243 Dec 20 20:26	9° $\mathcal{M}$ 54'00	
morning rise	3237 Jun 12 10:16	7° $\mathcal{I}$ 55'45		opposition	3244 Feb 25 11:48	6° $\mathcal{M}$ 27'29	1°26'52
retrograde	3237 Sep 27 02:41	16° $\mathcal{I}$ 06'55		min. Earth dist.	3244 Feb 25 08:59	6° $\mathcal{M}$ 28'03	8.15887 AU
opposition	3237 Dec 04 10:30	12° $\mathcal{I}$ 37'54	-2°-9'-13	direct	3244 May 03 08:48	2° $\mathcal{M}$ 58'00	
min. Earth dist.	3237 Dec 04 09:54	12° $\mathcal{I}$ 38'01	8.18394 AU	evening set	3244 Aug 17 08:56	11° $\mathcal{M}$ 06'44	
direct	3238 Feb 09 02:50	9° $\mathcal{I}$ 12'26					
evening set	3238 May 22 08:28	17° $\mathcal{I}$ 07'48		conjunction	3244 Sep 04 07:54	13° $\mathcal{M}$ 23'37	1°22'50
				minimum elong	3244 Sep 04 07:51	13° $\mathcal{M}$ 23'36	1°22'50
conjunction	3238 Jun 09 03:01	19° $\mathcal{I}$ 24'16	-1°-33'-28	max. Earth dist.	3244 Sep 04 11:02	13° $\mathcal{M}$ 24'37	10.19536 AU
minimum elong	3238 Jun 09 03:04	19° $\mathcal{I}$ 24'17	1°33'29	morning rise	3244 Sep 22 03:51	15° $\mathcal{M}$ 39'31	
max. Earth dist.	3238 Jun 09 04:04	19° $\mathcal{I}$ 24'37	10.14780 AU	retrograde	3245 Jan 02 12:18	23° $\mathcal{M}$ 32'11	
morning rise	3238 Jun 27 01:13	21° $\mathcal{I}$ 41'53		opposition	3245 Mar 10 05:58	20° $\mathcal{M}$ 06'58	1°57'13
retrograde	3238 Oct 11 11:56	29° $\mathcal{I}$ 56'23		min. Earth dist.	3245 Mar 10 03:11	20° $\mathcal{M}$ 07'32	8.23723 AU
opposition	3238 Dec 18 09:01	26° $\mathcal{I}$ 26'58	-1°-41'-22	direct	3245 May 17 15:24	16° $\mathcal{M}$ 37'53	
min. Earth dist.	3238 Dec 18 07:46	26° $\mathcal{I}$ 27'13	8.11825 AU	evening set	3245 Aug 31 20:06	24° $\mathcal{M}$ 42'32	
direct	3239 Feb 22 23:29	23° $\mathcal{I}$ 00'16					
	3239 May 28 16:19	0° $\mathcal{\Theta}$		conjunction	3245 Sep 18 15:10	26° $\mathcal{M}$ 57'01	1°44'44
evening set	3239 Jun 05 21:58	1° $\mathcal{\Theta}$ 01'51		minimum elong	3245 Sep 18 15:07	26° $\mathcal{M}$ 57'01	1°44'43
				max. Earth dist.	3245 Sep 18 18:02	26° $\mathcal{M}$ 57'56	10.28180 AU
conjunction	3239 Jun 23 20:50	3° $\mathcal{\Theta}$ 20'21	-1°-8'-15	morning rise	3245 Oct 06 06:33	29° $\mathcal{M}$ 10'21	
minimum elong	3239 Jun 23 20:53	3° $\mathcal{\Theta}$ 20'22	1°08'16		3245 Oct 13 00:07	0° $\mathcal{\Omega}$	
max. Earth dist.	3239 Jun 23 23:15	3° $\mathcal{\Theta}$ 21'08	10.09331 AU	retrograde	3246 Jan 15 20:41	6° $\mathcal{\Omega}$ 55'06	
morning rise	3239 Jul 11 22:20	5° $\mathcal{\Theta}$ 39'41					
retrograde	3239 Oct 25 22:59	13° $\mathcal{\Theta}$ 55'19					



opposition	3246 Mar 23 19:44	3°♂31'14	2°20'30	opposition	3252 Jun 07 01:39	18°♂00'29	1°58'31
min. Earth dist.	3246 Mar 23 16:49	3°♂31'49	8.33100 AU	min. Earth dist.	3252 Jun 07 02:26	18°♂00'20	8.91756 AU
direct	3246 May 31 18:13	0°♂02'53		direct	3252 Aug 17 02:39	14°♂38'53	
evening set	3246 Sep 14 22:59	8°♂01'57		evening set	3252 Nov 28 10:46	21°♂54'34	
conjunction	3246 Oct 02 13:45	10°♂13'47	2°00'35	conjunction	3252 Dec 15 06:02	23°♂53'46	1°26'57
minimum elong	3246 Oct 02 13:42	10°♂13'47	2°00'34	minimum elong	3252 Dec 15 06:04	23°♂53'47	1°26'57
max. Earth dist.	3246 Oct 02 16:32	10°♂14'40	10.38104 AU	max. Earth dist.	3252 Dec 15 04:17	23°♂53'15	10.94756 AU
morning rise	3246 Oct 20 00:13	12°♂24'19		morning rise	3252 Dec 31 22:26	25°♂52'12	
retrograde	3247 Jan 28 23:53	20°♂00'58			3253 Feb 09 03:25	0°♂	
opposition	3247 Apr 06 04:37	16°♂38'30	2°35'50	retrograde	3253 Apr 10 18:50	2°♂54'16	
min. Earth dist.	3247 Apr 06 01:45	16°♂39'04	8.43481 AU		3253 Jun 14 04:15	30°♂♂	
direct	3247 Jun 14 14:22	13°♂11'06		opposition	3253 Jun 19 08:50	29°♂36'53	1°33'33
evening set	3247 Sep 28 16:20	21°♂03'25		min. Earth dist.	3253 Jun 19 10:58	29°♂36'29	8.97389 AU
				direct	3253 Aug 29 10:03	26°♂16'15	
conjunction	3247 Oct 16 02:42	23°♂12'34	2°09'54		3253 Nov 08 03:38	0°♂	
minimum elong	3247 Oct 16 02:41	23°♂12'33	2°09'54	evening set	3253 Dec 10 03:14	3°♂26'44	
max. Earth dist.	3247 Oct 16 05:31	23°♂13'26	10.48763 AU				
morning rise	3247 Nov 02 08:26	25°♂20'20		conjunction	3253 Dec 26 21:00	5°♂25'03	1°05'05
	3247 Dec 15 01:21	0°♂		minimum elong	3253 Dec 26 21:02	5°♂25'03	1°05'05
retrograde	3248 Feb 10 20:24	2°♂49'05		max. Earth dist.	3253 Dec 26 17:40	5°♂24'03	10.99408 AU
	3248 Apr 11 12:02	30°♂♂		morning rise	3254 Jan 12 12:47	7°♂22'48	
opposition	3248 Apr 18 08:40	29°♂27'55	2°42'57	retrograde	3254 Apr 22 14:07	14°♂23'33	
min. Earth dist.	3248 Apr 18 06:32	29°♂28'20	8.54317 AU	opposition	3254 Jul 01 14:20	11°♂06'12	1°05'05
direct	3248 Jun 27 04:37	26°♂01'39		min. Earth dist.	3254 Jul 01 17:45	11°♂05'34	9.00987 AU
	3248 Sep 07 05:54	0°♂		direct	3254 Sep 10 14:22	7°♂46'21	
evening set	3248 Oct 10 23:31	3°♂46'25		evening set	3254 Dec 21 16:04	14°♂52'53	
conjunction	3248 Oct 28 05:43	5°♂52'59	2°12'38	conjunction	3255 Jan 07 08:46	16°♂50'37	0°40'46
minimum elong	3248 Oct 28 05:43	5°♂52'59	2°12'38	minimum elong	3255 Jan 07 08:47	16°♂50'37	0°40'46
max. Earth dist.	3248 Oct 28 07:52	5°♂53'39	10.59612 AU	max. Earth dist.	3255 Jan 07 04:15	16°♂49'17	11.01985 AU
morning rise	3248 Nov 14 07:22	7°♂58'13		morning rise	3255 Jan 24 00:24	18°♂48'02	
	3249 Feb 03 05:13	15°♂		retrograde	3255 May 04 11:19	25°♂49'02	
retrograde	3249 Feb 22 09:18	15°♂19'33		opposition	3255 Jul 13 18:50	22°♂31'23	0°34'14
	3249 Mar 13 16:46	15°♂♂		min. Earth dist.	3255 Jul 13 22:24	22°♂30'43	9.02490 AU
opposition	3249 May 01 07:41	11°♂59'35	2°42'04	direct	3255 Sep 22 17:13	19°♂12'08	
min. Earth dist.	3249 May 01 06:45	11°♂59'46	8.65066 AU	evening set	3256 Jan 02 02:55	26°♂15'56	
direct	3249 Jul 10 13:30	8°♂34'29					
	3249 Oct 13 17:20	15°♂		conjunction	3256 Jan 18 19:06	28°♂13'28	0°14'56
evening set	3249 Oct 23 21:01	16°♂11'28		minimum elong	3256 Jan 18 19:07	28°♂13'28	0°14'57
				behind sun begin	3256 Jan 18 16:17	28°♂12'38	
conjunction	3249 Nov 09 23:30	18°♂15'40	2°09'04	behind sun end	3256 Jan 18 21:57	28°♂14'18	
minimum elong	3249 Nov 09 23:31	18°♂15'41	2°09'05	max. Earth dist.	3256 Jan 18 14:58	28°♂12'15	11.02448 AU
max. Earth dist.	3249 Nov 10 00:03	18°♂15'50	10.70120 AU		3256 Feb 02 21:17	0°♂	
morning rise	3249 Nov 26 21:50	20°♂18'38		morning rise	3256 Feb 04 10:51	0°♂10'53	
retrograde	3250 Mar 06 17:00	27°♂33'21		retrograde	3256 May 15 10:15	7°♂13'34	
opposition	3250 May 14 01:42	24°♂14'23	2°33'47	opposition	3256 Jul 24 23:04	3°♂55'20	0°02'05
min. Earth dist.	3250 May 14 01:43	24°♂14'23	8.75206 AU	min. Earth dist.	3256 Jul 25 02:14	3°♂54'45	9.01886 AU
direct	3250 Jul 23 16:09	20°♂50'29		desc. node	3256 Aug 18 03:47	2°♂13'15	
evening set	3250 Nov 05 09:20	28°♂19'46		direct	3256 Oct 03 15:50	0°♂36'28	
	3250 Nov 19 08:07	0°♂♂		evening set	3257 Jan 12 13:22	7°♂38'55	
conjunction	3250 Nov 22 08:45	0°♂21'56	1°59'47	conjunction	3257 Jan 29 05:20	9°♂36'33	0°-11'-34
minimum elong	3250 Nov 22 08:47	0°♂21'57	1°59'47	minimum elong	3257 Jan 29 05:19	9°♂36'33	0°11'34
max. Earth dist.	3250 Nov 22 08:00	0°♂21'43	10.79784 AU	behind sun begin	3257 Jan 29 00:15	9°♂35'04	
morning rise	3250 Dec 09 04:30	2°♂23'00		behind sun end	3257 Jan 29 10:23	9°♂38'02	
retrograde	3251 Mar 18 19:38	9°♂32'08		max. Earth dist.	3257 Jan 29 01:30	9°♂35'26	11.00804 AU
opposition	3251 May 26 15:31	6°♂13'55	2°18'57	morning rise	3257 Feb 14 21:28	11°♂34'18	
min. Earth dist.	3251 May 26 15:48	6°♂13'52	8.84251 AU		3257 Mar 18 17:36	15°♂	
direct	3251 Aug 05 12:14	2°♂51'14		retrograde	3257 May 27 11:33	18°♂40'07	
evening set	3251 Nov 17 13:20	10°♂13'15		opposition	3257 Aug 06 04:11	15°♂21'05	0°-30'-15
				min. Earth dist.	3257 Aug 06 07:20	15°♂20'30	8.99210 AU
conjunction	3251 Dec 04 10:24	12°♂13'45	1°45'28		3257 Aug 10 22:13	15°♂	
minimum elong	3251 Dec 04 10:26	12°♂13'45	1°45'28	direct	3257 Oct 15 13:58	12°♂02'21	
max. Earth dist.	3251 Dec 04 09:21	12°♂13'26	10.88132 AU		3257 Dec 16 06:04	15°♂	
morning rise	3251 Dec 21 04:09	14°♂13'17		evening set	3258 Jan 24 01:01	19°♂04'52	
retrograde	3252 Mar 29 19:47	21°♂18'11					



conjunction	3258 Feb 09 16:50	21° <del>30</del> 02'55	0°-37'-39	evening set	3264 Apr 05 05:28	1° <del>8</del> 23'57	
minimum elong	3258 Feb 09 16:49	21° <del>30</del> 02'55	0°37'40				
max. Earth dist.	3258 Feb 09 12:22	21° <del>30</del> 01'36	10.97125 AU	conjunction	3264 Apr 22 08:11	3° <del>8</del> 31'38	-2°-12'-31
morning rise	3258 Feb 26 09:51	23° <del>30</del> 01'21		minimum elong	3264 Apr 22 08:12	3° <del>8</del> 31'38	2°12'31
	3258 May 24 05:04	0° <del>30</del>		max. Earth dist.	3264 Apr 22 06:47	3° <del>8</del> 31'11	10.44971 AU
retrograde	3258 Jun 08 16:30	0° <del>30</del> 11'41		morning rise	3264 May 09 15:32	5° <del>8</del> 40'44	
	3258 Jun 24 05:06	30° <del>30</del>		retrograde	3264 Aug 23 22:38	13° <del>8</del> 36'52	
opposition	3258 Aug 18 11:05	26° <del>30</del> 51'39	-1°-1'-38	opposition	3264 Nov 01 10:33	10° <del>8</del> 09'32	-2°-43'-13
min. Earth dist.	3258 Aug 18 14:48	26° <del>30</del> 50'58	8.94581 AU	min. Earth dist.	3264 Nov 01 11:04	10° <del>8</del> 09'26	8.39910 AU
direct	3258 Oct 27 11:46	23° <del>30</del> 32'51		direct	3265 Jan 07 18:32	6° <del>8</del> 46'46	
	3259 Jan 30 08:08	0° <del>30</del>		evening set	3265 Apr 18 13:42	14° <del>8</del> 24'30	
evening set	3259 Feb 04 15:19	0° <del>30</del> 36'52			3265 Apr 23 07:52	15° <del>8</del>	
conjunction	3259 Feb 21 07:27	2° <del>30</del> 35'40	-1°-2'-28	conjunction	3265 May 05 20:43	16° <del>8</del> 34'47	-2°-9'-30
minimum elong	3259 Feb 21 07:25	2° <del>30</del> 35'39	1°02'29	minimum elong	3265 May 05 20:44	16° <del>8</del> 34'47	2°09'31
max. Earth dist.	3259 Feb 21 02:48	2° <del>30</del> 34'16	10.91569 AU	max. Earth dist.	3265 May 05 21:07	16° <del>8</del> 34'55	10.34752 AU
morning rise	3259 Mar 10 01:42	4° <del>30</del> 35'06		morning rise	3265 May 23 08:12	18° <del>8</del> 46'31	
retrograde	3259 Jun 21 00:16	11° <del>30</del> 51'15		retrograde	3265 Sep 06 22:30	26° <del>8</del> 50'03	
opposition	3259 Aug 30 20:32	8° <del>30</del> 30'03	-1°-30'-54	opposition	3265 Nov 14 23:40	23° <del>8</del> 21'49	-2°-35'-29
min. Earth dist.	3259 Aug 31 00:05	8° <del>30</del> 29'23	8.88177 AU	min. Earth dist.	3265 Nov 14 22:47	23° <del>8</del> 21'59	8.30068 AU
direct	3259 Nov 08 11:07	5° <del>30</del> 10'59		direct	3266 Jan 20 23:50	19° <del>8</del> 58'02	
evening set	3260 Feb 16 09:35	12° <del>30</del> 17'54		evening set	3266 May 02 07:12	27° <del>8</del> 43'24	
conjunction	3260 Mar 04 02:40	14° <del>30</del> 17'48	-1°-24'-59	conjunction	3266 May 19 18:57	29° <del>8</del> 56'22	-1°-59'-33
minimum elong	3260 Mar 04 02:38	14° <del>30</del> 17'48	1°25'00	minimum elong	3266 May 19 19:00	29° <del>8</del> 56'23	1°59'34
max. Earth dist.	3260 Mar 03 22:58	14° <del>30</del> 16'42	10.84330 AU	max. Earth dist.	3266 May 19 20:57	29° <del>8</del> 57'00	10.25439 AU
morning rise	3260 Mar 20 22:25	16° <del>30</del> 18'33			3266 May 20 06:21	0° <del>10</del>	
retrograde	3260 Jul 02 15:48	23° <del>30</del> 41'41		morning rise	3266 Jun 06 10:53	2° <del>10</del> 10'42	
opposition	3260 Sep 11 09:17	20° <del>30</del> 19'12	-1°-56'-50	retrograde	3266 Sep 21 04:06	10° <del>10</del> 20'16	
min. Earth dist.	3260 Sep 11 11:55	20° <del>30</del> 18'43	8.80215 AU	opposition	3266 Nov 28 17:26	6° <del>10</del> 51'25	-2°-19'-4
direct	3260 Nov 19 14:22	16° <del>30</del> 59'42		min. Earth dist.	3266 Nov 28 15:18	6° <del>10</del> 51'51	8.21393 AU
evening set	3261 Feb 27 09:27	24° <del>30</del> 10'50		direct	3267 Feb 03 11:10	3° <del>10</del> 26'35	
conjunction	3261 Mar 16 03:57	26° <del>30</del> 12'11	-1°-44'-12	evening set	3267 May 16 09:59	11° <del>10</del> 19'16	
minimum elong	3261 Mar 16 03:55	26° <del>30</del> 12'11	1°44'13	conjunction	3267 Jun 03 02:33	13° <del>10</del> 34'47	-1°-42'-47
max. Earth dist.	3261 Mar 16 01:19	26° <del>30</del> 11'23	10.75664 AU	minimum elong	3267 Jun 03 02:37	13° <del>10</del> 34'48	1°42'48
morning rise	3261 Apr 02 01:36	28° <del>30</del> 14'34		max. Earth dist.	3267 Jun 03 05:31	13° <del>10</del> 35'44	10.17571 AU
	3261 Apr 17 05:49	0° <del>40</del>		morning rise	3267 Jun 20 22:50	15° <del>10</del> 51'31	
retrograde	3261 Jul 15 13:53	5° <del>40</del> 45'32		retrograde	3267 Oct 05 14:34	24° <del>10</del> 05'14	
opposition	3261 Sep 24 02:06	2° <del>40</del> 21'46	-2°-18'-12	opposition	3267 Dec 12 15:00	20° <del>10</del> 36'05	-1°-54'-25
min. Earth dist.	3261 Sep 24 03:43	2° <del>40</del> 21'27	8.70993 AU	min. Earth dist.	3267 Dec 12 12:11	20° <del>10</del> 36'39	8.14401 AU
	3261 Oct 28 11:45	30° <del>40</del>		direct	3268 Feb 17 04:02	17° <del>10</del> 10'11	
direct	3261 Dec 01 18:45	29° <del>40</del> 01'40		evening set	3268 May 29 21:00	25° <del>10</del> 09'28	
	3262 Jan 04 09:00	0° <del>40</del>		conjunction	3268 Jun 16 18:00	27° <del>10</del> 27'10	-1°-19'-53
evening set	3262 Mar 11 16:04	6° <del>40</del> 18'12		minimum elong	3268 Jun 16 18:03	27° <del>10</del> 27'12	1°19'54
conjunction	3262 Mar 28 12:31	8° <del>40</del> 21'21	-1°-59'-8	max. Earth dist.	3268 Jun 16 21:24	27° <del>10</del> 28'17	10.11622 AU
minimum elong	3262 Mar 28 12:29	8° <del>40</del> 21'20	1°59'09	morning rise	3268 Jul 04 18:04	29° <del>10</del> 45'52	
max. Earth dist.	3262 Mar 28 09:59	8° <del>40</del> 20'34	10.65927 AU		3268 Jul 06 14:52	0° <del>10</del>	
morning rise	3262 Apr 14 12:47	10° <del>40</del> 25'42		retrograde	3268 Oct 19 02:17	8° <del>10</del> 01'33	
retrograde	3262 Jul 28 17:59	18° <del>40</del> 05'04		opposition	3268 Dec 25 15:36	4° <del>10</del> 32'25	-1°-22'-43
opposition	3262 Oct 06 23:50	14° <del>40</del> 40'00	-2°-33'-47	min. Earth dist.	3268 Dec 25 12:36	4° <del>10</del> 33'02	8.09525 AU
min. Earth dist.	3262 Oct 07 01:09	14° <del>40</del> 39'44	8.60895 AU	direct	3269 Mar 02 04:21	1° <del>10</del> 05'33	
direct	3262 Dec 14 04:22	11° <del>40</del> 19'08		evening set	3269 Jun 13 14:27	9° <del>10</del> 10'13	
evening set	3263 Mar 24 06:24	18° <del>40</del> 42'05		conjunction	3269 Jul 01 15:02	11° <del>10</del> 29'31	0°-52'-2
conjunction	3263 Apr 10 05:33	20° <del>40</del> 47'21	-2°-8'-51	minimum elong	3269 Jul 01 15:04	11° <del>10</del> 29'32	0°52'03
minimum elong	3263 Apr 10 05:32	20° <del>40</del> 47'20	2°08'52	max. Earth dist.	3269 Jul 01 18:42	11° <del>10</del> 30'42	10.07953 AU
max. Earth dist.	3263 Apr 10 03:14	20° <del>40</del> 46'37	10.55539 AU	morning rise	3269 Jul 19 17:48	13° <del>10</del> 49'29	
morning rise	3263 Apr 27 09:08	22° <del>40</del> 53'58		retrograde	3269 Nov 02 13:10	22° <del>10</del> 04'53	
	3263 Jul 13 07:20	0° <del>40</del>		opposition	3270 Jan 08 17:48	18° <del>10</del> 36'03	0°-45'-46
retrograde	3263 Aug 11 05:05	0° <del>40</del> 41'53		min. Earth dist.	3270 Jan 08 14:47	18° <del>10</del> 36'40	8.07058 AU
	3263 Sep 09 07:20	30° <del>40</del>		direct	3270 Mar 16 09:59	15° <del>10</del> 08'19	
opposition	3263 Oct 20 02:40	27° <del>40</del> 15'36	-2°-42'-26	evening set	3270 Jun 28 12:35	23° <del>10</del> 16'51	
min. Earth dist.	3263 Oct 20 03:48	27° <del>40</del> 15'23	8.50367 AU	conjunction	3270 Jul 16 15:33	25° <del>10</del> 36'59	0°-20'-57
direct	3263 Dec 26 20:18	23° <del>40</del> 53'50		minimum elong	3270 Jul 16 15:34	25° <del>10</del> 37'00	0°20'58
	3264 Mar 24 14:00	0° <del>40</del>					



max. Earth dist.	3270 Jul 16 19:25	25° $\mathfrak{S}$ 38'14	10.06759 AU	retrograde	3276 Jan 23 19:41	14° $\mathfrak{A}$ 40'15	
morning rise	3270 Aug 03 19:30	27° $\mathfrak{S}$ 57'25		opposition	3276 Mar 30 20:16	11° $\mathfrak{A}$ 17'23	2°30'10
	3270 Aug 20 08:21	0° $\mathfrak{Q}$		min. Earth dist.	3276 Mar 30 18:56	11° $\mathfrak{A}$ 17'39	8.38730 AU
retrograde	3270 Nov 16 21:35	6° $\mathfrak{Q}$ 10'18		direct	3276 Jun 07 23:40	7° $\mathfrak{A}$ 49'39	
opposition	3271 Jan 22 20:01	2° $\mathfrak{Q}$ 42'01	0°-5'-57	evening set	3276 Sep 22 05:01	15° $\mathfrak{A}$ 45'22	
min. Earth dist.	3271 Jan 22 16:54	2° $\mathfrak{Q}$ 42'40	8.07092 AU				
	3271 Mar 01 12:41	30° $\mathfrak{R}$ $\mathfrak{S}$		conjunction	3276 Oct 09 17:11	17° $\mathfrak{A}$ 55'46	2°06'40
asc. node	3271 Mar 19 20:19	29° $\mathfrak{S}$ 20'14		minimum elong	3276 Oct 09 17:09	17° $\mathfrak{A}$ 55'45	2°06'39
direct	3271 Mar 30 18:34	29° $\mathfrak{S}$ 13'35		max. Earth dist.	3276 Oct 09 18:14	17° $\mathfrak{A}$ 56'05	10.43719 AU
	3271 Apr 28 20:18	0° $\mathfrak{Q}$		morning rise	3276 Oct 27 01:03	20° $\mathfrak{A}$ 04'48	
evening set	3271 Jul 13 12:46	7° $\mathfrak{Q}$ 24'17		retrograde	3277 Feb 04 17:48	27° $\mathfrak{A}$ 37'18	
				opposition	3277 Apr 13 02:43	24° $\mathfrak{A}$ 15'34	2°40'52
conjunction	3271 Jul 31 16:33	9° $\mathfrak{Q}$ 44'26	0°11'26	min. Earth dist.	3277 Apr 13 01:42	24° $\mathfrak{A}$ 15'46	8.49054 AU
minimum elong	3271 Jul 31 16:32	9° $\mathfrak{Q}$ 44'26	0°11'26	direct	3277 Jun 21 18:26	20° $\mathfrak{A}$ 48'40	
behind sun begin	3271 Jul 31 11:18	9° $\mathfrak{Q}$ 42'45		evening set	3277 Oct 05 16:54	28° $\mathfrak{A}$ 37'10	
behind sun end	3271 Jul 31 21:46	9° $\mathfrak{Q}$ 46'06			3277 Oct 16 23:34	0° $\mathfrak{M}$	
max. Earth dist.	3271 Jul 31 20:19	9° $\mathfrak{Q}$ 45'38	10.08015 AU				
morning rise	3271 Aug 18 19:58	12° $\mathfrak{Q}$ 04'26		conjunction	3277 Oct 23 00:52	0° $\mathfrak{M}$ 44'56	2°12'14
	3271 Sep 11 23:26	15° $\mathfrak{Q}$		minimum elong	3277 Oct 23 00:52	0° $\mathfrak{M}$ 44'56	2°12'14
retrograde	3271 Dec 01 03:13	20° $\mathfrak{Q}$ 13'00		max. Earth dist.	3277 Oct 23 01:19	0° $\mathfrak{M}$ 45'04	10.54189 AU
opposition	3272 Feb 05 21:16	16° $\mathfrak{Q}$ 45'31	0°34'05	morning rise	3277 Nov 09 04:28	2° $\mathfrak{M}$ 51'21	
min. Earth dist.	3272 Feb 05 18:05	16° $\mathfrak{Q}$ 46'10	8.09512 AU	retrograde	3278 Feb 17 09:10	10° $\mathfrak{M}$ 16'10	
	3272 Feb 28 08:09	15° $\mathfrak{R}$ $\mathfrak{Q}$		opposition	3278 Apr 26 03:59	6° $\mathfrak{M}$ 55'28	2°43'25
direct	3272 Apr 13 03:22	13° $\mathfrak{Q}$ 16'41		min. Earth dist.	3278 Apr 26 02:51	6° $\mathfrak{M}$ 55'41	8.59556 AU
	3272 May 27 09:12	15° $\mathfrak{Q}$		direct	3278 Jul 05 07:14	3° $\mathfrak{M}$ 29'33	
evening set	3272 Jul 27 12:15	21° $\mathfrak{Q}$ 27'50		evening set	3278 Oct 18 18:45	11° $\mathfrak{M}$ 10'17	
conjunction	3272 Aug 14 15:10	23° $\mathfrak{Q}$ 47'09	0°42'56	conjunction	3278 Nov 04 22:57	13° $\mathfrak{M}$ 15'36	2°11'21
minimum elong	3272 Aug 14 15:07	23° $\mathfrak{Q}$ 47'08	0°42'55	minimum elong	3278 Nov 04 22:58	13° $\mathfrak{M}$ 15'36	2°11'21
max. Earth dist.	3272 Aug 14 18:49	23° $\mathfrak{Q}$ 48'20	10.11547 AU	max. Earth dist.	3278 Nov 04 23:35	13° $\mathfrak{M}$ 15'48	10.64585 AU
morning rise	3272 Sep 01 16:22	26° $\mathfrak{Q}$ 05'55			3278 Nov 19 05:27	15° $\mathfrak{M}$	
	3272 Oct 04 19:44	0° $\mathfrak{M}$		morning rise	3278 Nov 21 22:44	15° $\mathfrak{M}$ 19'37	
retrograde	3272 Dec 14 05:16	4° $\mathfrak{M}$ 08'51		retrograde	3279 Mar 01 20:20	22° $\mathfrak{M}$ 37'26	
opposition	3273 Feb 18 20:24	0° $\mathfrak{M}$ 42'23	1°11'46	opposition	3279 May 09 00:15	19° $\mathfrak{M}$ 17'38	2°38'15
min. Earth dist.	3273 Feb 18 17:08	0° $\mathfrak{M}$ 43'03	8.14138 AU	min. Earth dist.	3279 May 08 23:32	19° $\mathfrak{M}$ 17'46	8.69723 AU
	3273 Feb 27 13:09	30° $\mathfrak{R}$ $\mathfrak{Q}$		direct	3279 Jul 18 12:21	15° $\mathfrak{M}$ 52'48	
direct	3273 Apr 27 12:09	27° $\mathfrak{Q}$ 13'26		evening set	3279 Oct 31 10:58	23° $\mathfrak{M}$ 25'40	
	3273 Jun 23 21:24	0° $\mathfrak{M}$					
evening set	3273 Aug 11 08:43	5° $\mathfrak{M}$ 23'18		conjunction	3279 Nov 17 11:53	25° $\mathfrak{M}$ 28'50	2°04'27
				minimum elong	3279 Nov 17 11:55	25° $\mathfrak{M}$ 28'50	2°04'28
conjunction	3273 Aug 29 09:16	7° $\mathfrak{M}$ 41'04	1°11'38	max. Earth dist.	3279 Nov 17 12:17	25° $\mathfrak{M}$ 28'57	10.74427 AU
minimum elong	3273 Aug 29 09:13	7° $\mathfrak{M}$ 41'03	1°11'37	morning rise	3279 Dec 04 08:38	27° $\mathfrak{M}$ 30'47	
max. Earth dist.	3273 Aug 29 12:54	7° $\mathfrak{M}$ 42'13	10.17194 AU		3279 Dec 26 05:28	0° $\mathfrak{A}$	
morning rise	3273 Sep 16 06:57	9° $\mathfrak{M}$ 57'56		retrograde	3280 Mar 13 01:26	4° $\mathfrak{A}$ 42'30	
retrograde	3273 Dec 28 01:08	17° $\mathfrak{M}$ 54'05		opposition	3280 May 20 15:59	1° $\mathfrak{A}$ 23'29	2°26'08
opposition	3274 Mar 04 16:25	14° $\mathfrak{M}$ 28'46	1°44'46	min. Earth dist.	3280 May 20 16:14	1° $\mathfrak{A}$ 23'26	8.79115 AU
min. Earth dist.	3274 Mar 04 13:33	14° $\mathfrak{M}$ 29'21	8.20787 AU		3280 Jun 08 12:46	30° $\mathfrak{R}$ $\mathfrak{M}$	
direct	3274 May 11 19:24	10° $\mathfrak{M}$ 59'59		direct	3280 Jul 30 09:45	27° $\mathfrak{M}$ 59'44	
evening set	3274 Aug 25 23:42	19° $\mathfrak{M}$ 06'45			3280 Sep 18 23:06	0° $\mathfrak{A}$	
				evening set	3280 Nov 11 18:26	5° $\mathfrak{A}$ 25'06	
conjunction	3274 Sep 12 20:43	21° $\mathfrak{M}$ 22'21	1°35'53	conjunction	3280 Nov 28 16:35	7° $\mathfrak{A}$ 26'24	1°52'12
minimum elong	3274 Sep 12 20:39	21° $\mathfrak{M}$ 22'20	1°35'52	minimum elong	3280 Nov 28 16:37	7° $\mathfrak{A}$ 26'25	1°52'12
max. Earth dist.	3274 Sep 12 23:48	21° $\mathfrak{M}$ 23'20	10.24713 AU	max. Earth dist.	3280 Nov 28 15:52	7° $\mathfrak{A}$ 26'11	10.83295 AU
morning rise	3274 Sep 30 14:00	23° $\mathfrak{M}$ 36'50		morning rise	3280 Dec 15 11:11	9° $\mathfrak{A}$ 26'42	
	3274 Dec 01 17:38	0° $\mathfrak{A}$		retrograde	3281 Mar 25 01:26	16° $\mathfrak{A}$ 33'29	
retrograde	3275 Jan 10 13:54	1° $\mathfrak{A}$ 25'23		opposition	3281 Jun 02 03:36	13° $\mathfrak{A}$ 15'03	2°07'59
	3275 Feb 20 02:08	30° $\mathfrak{R}$ $\mathfrak{M}$		min. Earth dist.	3281 Jun 02 04:49	13° $\mathfrak{A}$ 14'49	8.87339 AU
opposition	3275 Mar 18 08:40	28° $\mathfrak{M}$ 01'17	2°11'17	direct	3281 Aug 12 02:58	9° $\mathfrak{A}$ 52'24	
min. Earth dist.	3275 Mar 18 06:36	28° $\mathfrak{M}$ 01'42	8.29134 AU	evening set	3281 Nov 23 18:35	17° $\mathfrak{A}$ 10'57	
direct	3275 May 25 23:55	24° $\mathfrak{M}$ 32'54					
	3275 Aug 18 13:22	0° $\mathfrak{A}$					
evening set	3275 Sep 09 06:59	2° $\mathfrak{A}$ 34'51		conjunction	3281 Dec 10 14:32	19° $\mathfrak{A}$ 10'46	1°35'23
				minimum elong	3281 Dec 10 14:34	19° $\mathfrak{A}$ 10'47	1°35'23
conjunction	3275 Sep 26 23:39	4° $\mathfrak{A}$ 47'55	1°54'28	max. Earth dist.	3281 Dec 10 12:35	19° $\mathfrak{A}$ 10'11	10.90829 AU
minimum elong	3275 Sep 26 23:36	4° $\mathfrak{A}$ 47'54	1°54'27	morning rise	3281 Dec 27 07:40	21° $\mathfrak{A}$ 09'45	
max. Earth dist.	3275 Sep 27 01:45	4° $\mathfrak{A}$ 48'35	10.33715 AU	retrograde	3282 Apr 05 23:39	28° $\mathfrak{A}$ 12'56	
morning rise	3275 Oct 14 12:11	6° $\mathfrak{A}$ 59'43		opposition	3282 Jun 14 11:43	24° $\mathfrak{A}$ 54'54	1°44'49



min. Earth dist.	3282 Jun 14 13:00	24° <del>2</del> 54'40	8.94062 AU	retrograde	3288 Jun 14 22:24	6° <del>8</del> 56'03	
direct	3282 Aug 24 14:16	21° <del>2</del> 33'20		opposition	3288 Aug 24 17:58	3° <del>8</del> 35'56	-1°-18'-12
evening set	3282 Dec 05 12:44	28° <del>2</del> 45'59		min. Earth dist.	3288 Aug 24 19:37	3° <del>8</del> 35'37	8.93840 AU
	3282 Dec 16 00:40	0° <del>3</del>		direct	3288 Nov 02 13:30	0° <del>8</del> 17'37	
				evening set	3289 Feb 10 13:45	7° <del>8</del> 21'59	
conjunction	3282 Dec 22 07:09	0° <del>3</del> 44'41	1°14'52				
minimum elong	3282 Dec 22 07:11	0° <del>3</del> 44'42	1°14'51	conjunction	3289 Feb 27 06:13	9° <del>8</del> 21'01	-1°-15'-16
max. Earth dist.	3282 Dec 22 05:19	0° <del>3</del> 44'09	10.96734 AU	minimum elong	3289 Feb 27 06:10	9° <del>8</del> 21'00	1°15'18
morning rise	3283 Jan 07 23:16	2° <del>3</del> 42'44		max. Earth dist.	3289 Feb 27 03:27	9° <del>8</del> 20'12	10.90613 AU
retrograde	3283 Apr 17 20:14	9° <del>3</del> 43'46		morning rise	3289 Mar 16 01:00	11° <del>8</del> 20'46	
opposition	3283 Jun 26 17:33	6° <del>3</del> 25'56	1°17'44	retrograde	3289 Jun 27 10:43	18° <del>8</del> 39'20	
min. Earth dist.	3283 Jun 26 18:34	6° <del>3</del> 25'45	8.99034 AU	opposition	3289 Sep 06 04:23	15° <del>8</del> 18'11	-1°-45'-37
direct	3283 Sep 05 20:09	3° <del>3</del> 05'21		min. Earth dist.	3289 Sep 06 06:28	15° <del>8</del> 17'47	8.87046 AU
evening set	3283 Dec 17 02:23	10° <del>3</del> 13'13		direct	3289 Nov 14 13:25	11° <del>8</del> 59'38	
				evening set	3290 Feb 22 10:10	19° <del>8</del> 07'26	
conjunction	3284 Jan 02 19:42	12° <del>3</del> 11'09	0°51'31				
minimum elong	3284 Jan 02 19:44	12° <del>3</del> 11'10	0°51'31	conjunction	3290 Mar 11 03:36	21° <del>8</del> 07'41	-1°-35'-59
max. Earth dist.	3284 Jan 02 18:10	12° <del>3</del> 10'42	11.00780 AU	minimum elong	3290 Mar 11 03:34	21° <del>8</del> 07'40	1°36'01
morning rise	3284 Jan 19 11:16	14° <del>3</del> 08'38		max. Earth dist.	3290 Mar 11 00:22	21° <del>8</del> 06'42	10.82997 AU
retrograde	3284 Apr 28 17:40	21° <del>3</del> 08'59		morning rise	3290 Mar 28 00:14	23° <del>8</del> 08'53	
opposition	3284 Jul 07 21:50	17° <del>3</del> 51'09	0°47'49		3290 Jun 13 12:11	0° <del>8</del>	
min. Earth dist.	3284 Jul 07 23:15	17° <del>3</del> 50'53	9.02069 AU	retrograde	3290 Jul 10 03:11	0° <del>8</del> 34'42	
direct	3284 Sep 16 22:03	14° <del>3</del> 31'25			3290 Aug 06 00:49	30° <del>8</del>	
evening set	3284 Dec 27 13:31	21° <del>3</del> 35'48		opposition	3290 Sep 18 18:34	27° <del>8</del> 12'21	-2°-9'-2
				min. Earth dist.	3290 Sep 18 20:59	27° <del>8</del> 11'54	8.78716 AU
conjunction	3285 Jan 13 05:55	23° <del>3</del> 33'18	0°26'16	direct	3290 Nov 26 16:06	23° <del>8</del> 53'20	
minimum elong	3285 Jan 13 05:56	23° <del>3</del> 33'18	0°26'16		3291 Feb 25 04:06	0° <del>8</del>	
max. Earth dist.	3285 Jan 13 03:25	23° <del>3</del> 32'33	11.02819 AU	evening set	3291 Mar 06 12:38	1° <del>8</del> 05'50	
morning rise	3285 Jan 29 21:31	25° <del>3</del> 30'35					
	3285 Mar 14 16:07	0° <del>8</del>		conjunction	3291 Mar 23 07:51	3° <del>8</del> 07'39	-1°-52'-53
retrograde	3285 May 10 14:12	2° <del>8</del> 31'42		minimum elong	3291 Mar 23 07:49	3° <del>8</del> 07'39	1°52'54
	3285 Jul 09 11:58	30° <del>8</del>		max. Earth dist.	3291 Mar 23 05:07	3° <del>8</del> 06'50	10.73968 AU
opposition	3285 Jul 20 01:23	29° <del>8</del> 13'39	0°16'09	morning rise	3291 Apr 09 06:43	5° <del>8</del> 10'37	
min. Earth dist.	3285 Jul 20 03:49	29° <del>8</del> 13'12	9.03064 AU	retrograde	3291 Jul 23 02:11	12° <del>8</del> 44'29	
direct	3285 Sep 28 20:06	25° <del>8</del> 54'35		opposition	3291 Oct 01 12:53	9° <del>8</del> 20'50	-2°-27'-15
	3285 Dec 11 22:03	0° <del>8</del>		min. Earth dist.	3291 Oct 01 14:58	9° <del>8</del> 20'26	8.69110 AU
evening set	3286 Jan 07 23:30	2° <del>8</del> 56'52		direct	3291 Dec 09 00:07	6° <del>8</del> 01'07	
				evening set	3292 Mar 17 22:17	13° <del>8</del> 19'28	
conjunction	3286 Jan 24 15:19	4° <del>8</del> 54'15	0°00'01				
minimum elong	3286 Jan 24 15:19	4° <del>8</del> 54'15	0°00'01	conjunction	3292 Apr 03 20:01	15° <del>8</del> 23'17	-2°-5'00
behind sun begin	3286 Jan 24 10:29	4° <del>8</del> 52'51		minimum elong	3292 Apr 03 20:00	15° <del>8</del> 23'17	2°05'01
behind sun end	3286 Jan 24 20:09	4° <del>8</del> 55'38		max. Earth dist.	3292 Apr 03 17:56	15° <del>8</del> 22'39	10.63819 AU
desc. node	3286 Jan 24 16:07	4° <del>8</del> 54'26		morning rise	3292 Apr 20 21:41	17° <del>8</del> 28'21	
max. Earth dist.	3286 Jan 24 12:00	4° <del>8</del> 53'19	11.02786 AU	retrograde	3292 Aug 04 10:15	25° <del>8</del> 10'42	
morning rise	3286 Feb 10 07:18	6° <del>8</del> 51'40		opposition	3292 Oct 13 12:07	21° <del>8</del> 45'46	-2°-39'-7
retrograde	3286 May 22 12:42	13° <del>8</del> 55'07		min. Earth dist.	3292 Oct 13 13:29	21° <del>8</del> 45'30	8.58580 AU
opposition	3286 Aug 01 05:26	10° <del>8</del> 36'36	0°-16'-9	direct	3292 Dec 20 12:08	18° <del>8</del> 25'11	
min. Earth dist.	3286 Aug 01 08:00	10° <del>8</del> 36'07	9.01987 AU	evening set	3293 Mar 30 16:11	25° <del>8</del> 50'23	
direct	3286 Oct 10 19:02	7° <del>8</del> 17'59					
evening set	3287 Jan 19 09:41	14° <del>8</del> 19'33		conjunction	3293 Apr 16 17:02	27° <del>8</del> 56'29	-2°-11'-29
	3287 Jan 25 04:21	15° <del>8</del>		minimum elong	3293 Apr 16 17:01	27° <del>8</del> 56'28	2°11'30
				max. Earth dist.	3293 Apr 16 15:11	27° <del>8</del> 55'54	10.53009 AU
conjunction	3287 Feb 05 01:24	16° <del>8</del> 17'09	0°-26'-18	morning rise	3293 May 03 22:09	0° <del>8</del> 03'57	
minimum elong	3287 Feb 05 01:23	16° <del>8</del> 17'09	0°26'19		3293 May 03 09:10	0° <del>8</del>	
max. Earth dist.	3287 Feb 04 22:37	16° <del>8</del> 16'20	11.00681 AU	retrograde	3293 Aug 18 00:48	7° <del>8</del> 54'48	
morning rise	3287 Feb 21 17:57	18° <del>8</del> 15'01		opposition	3293 Oct 26 16:37	4° <del>8</del> 28'37	-2°-43'-36
retrograde	3287 Jun 03 15:50	25° <del>8</del> 22'15		min. Earth dist.	3293 Oct 26 17:28	4° <del>8</del> 28'27	8.47668 AU
opposition	3287 Aug 13 10:42	22° <del>8</del> 03'02	0°-47'-59	direct	3294 Jan 02 04:46	1° <del>8</del> 06'59	
min. Earth dist.	3287 Aug 13 12:35	22° <del>8</del> 02'41	8.98877 AU	evening set	3294 Apr 12 19:04	8° <del>8</del> 39'41	
direct	3287 Oct 22 16:30	18° <del>8</del> 44'41					
evening set	3288 Jan 30 21:58	25° <del>8</del> 46'56		conjunction	3294 Apr 29 23:44	10° <del>8</del> 48'19	-2°-11'-37
				minimum elong	3294 Apr 29 23:45	10° <del>8</del> 48'19	2°11'38
conjunction	3288 Feb 16 13:57	27° <del>8</del> 45'05	0°-51'-43	max. Earth dist.	3294 Apr 29 21:50	10° <del>8</del> 47'43	10.42139 AU
minimum elong	3288 Feb 16 13:55	27° <del>8</del> 45'05	0°51'44	morning rise	3294 May 17 09:00	12° <del>8</del> 58'25	
max. Earth dist.	3288 Feb 16 11:47	27° <del>8</del> 44'27	10.96575 AU		3294 Jun 03 08:15	15° <del>8</del>	
morning rise	3288 Mar 04 07:21	29° <del>8</del> 43'44		retrograde	3294 Aug 31 20:29	20° <del>8</del> 57'11	
	3288 Mar 06 15:24	0° <del>8</del>		opposition	3294 Nov 09 02:23	17° <del>8</del> 29'52	-2°-39'-54



min. Earth dist.	3294 Nov 09 03:07	17° $\text{♄}$ 29'43	8.36990 AU	max. Earth dist.	3300 Jul 25 01:42	3° $\text{♄}$ 18'20	10.06015 AU
	3294 Dec 14 13:20	15° $\text{♄}$		morning rise	3300 Aug 12 02:09	5° $\text{♄}$ 37'41	
direct	3295 Jan 15 05:57	14° $\text{♄}$ 07'00		asc. node	3300 Sep 10 14:00	9° $\text{♄}$ 09'35	
	3295 Feb 15 12:22	15° $\text{♄}$		retrograde	3300 Nov 24 19:26	13° $\text{♄}$ 48'49	
evening set	3295 Apr 26 07:11	21° $\text{♄}$ 47'28		opposition	3301 Jan 30 14:41	10° $\text{♄}$ 20'20	0°15'06
				min. Earth dist.	3301 Jan 30 12:00	10° $\text{♄}$ 20'54	8.06771 AU
conjunction	3295 May 13 16:22	23° $\text{♄}$ 58'49	-2°-4'-56	direct	3301 Apr 07 16:00	6° $\text{♄}$ 51'04	
minimum elong	3295 May 13 16:24	23° $\text{♄}$ 58'50	2°04'57	evening set	3301 Jul 21 18:36	15° $\text{♄}$ 02'31	
max. Earth dist.	3295 May 13 15:02	23° $\text{♄}$ 58'24	10.31814 AU		3301 Jul 21 10:39	15° $\text{♄}$	
morning rise	3295 May 31 06:10	26° $\text{♄}$ 11'36					
	3295 Jul 03 02:24	0° $\text{♄}$		conjunction	3301 Aug 08 22:08	17° $\text{♄}$ 22'29	0°28'06
retrograde	3295 Sep 14 21:54	4° $\text{♄}$ 17'12		minimum elong	3301 Aug 08 22:06	17° $\text{♄}$ 22'28	0°28'06
opposition	3295 Nov 22 17:03	0° $\text{♄}$ 48'56	-2°-27'-37	max. Earth dist.	3301 Aug 09 01:21	17° $\text{♄}$ 23'31	10.08170 AU
min. Earth dist.	3295 Nov 22 17:31	0° $\text{♄}$ 48'51	8.27136 AU	morning rise	3301 Aug 27 00:41	19° $\text{♄}$ 42'06	
	3295 Dec 02 23:07	30° $\text{♄}$		retrograde	3301 Dec 08 23:20	27° $\text{♄}$ 48'19	
direct	3296 Jan 28 14:05	27° $\text{♄}$ 24'46		opposition	3302 Feb 13 15:04	24° $\text{♄}$ 20'43	0°54'13
	3296 Mar 23 00:40	0° $\text{♄}$		min. Earth dist.	3302 Feb 13 12:31	24° $\text{♄}$ 21'15	8.10204 AU
evening set	3296 May 09 04:33	5° $\text{♄}$ 12'54		direct	3302 Apr 22 02:13	20° $\text{♄}$ 51'09	
				evening set	3302 Aug 05 16:57	29° $\text{♄}$ 02'14	
conjunction	3296 May 26 18:37	7° $\text{♄}$ 26'56	-1°-51'-23		3302 Aug 13 06:50	0° $\text{♄}$	
minimum elong	3296 May 26 18:40	7° $\text{♄}$ 26'57	1°51'23				
max. Earth dist.	3296 May 26 18:33	7° $\text{♄}$ 26'55	10.22599 AU	conjunction	3302 Aug 23 18:46	1° $\text{♄}$ 20'58	0°58'22
morning rise	3296 Jun 13 12:51	9° $\text{♄}$ 42'18		minimum elong	3302 Aug 23 18:44	1° $\text{♄}$ 20'57	0°58'22
retrograde	3296 Sep 28 04:18	17° $\text{♄}$ 53'09		max. Earth dist.	3302 Aug 23 21:40	1° $\text{♄}$ 21'54	10.12803 AU
opposition	3296 Dec 05 11:52	14° $\text{♄}$ 24'12	-2°-6'-52	morning rise	3302 Sep 10 18:31	3° $\text{♄}$ 39'01	
min. Earth dist.	3296 Dec 05 11:28	14° $\text{♄}$ 24'17	8.18658 AU	retrograde	3302 Dec 22 20:29	11° $\text{♄}$ 38'52	
direct	3297 Feb 10 04:13	10° $\text{♄}$ 58'45		opposition	3303 Feb 27 12:41	8° $\text{♄}$ 12'24	1°29'43
evening set	3297 May 23 10:31	18° $\text{♄}$ 54'02		min. Earth dist.	3303 Feb 27 10:03	8° $\text{♄}$ 12'56	8.15999 AU
				direct	3303 May 06 11:29	4° $\text{♄}$ 42'53	
conjunction	3297 Jun 10 05:24	21° $\text{♄}$ 10'32	-1°-31'-20	evening set	3303 Aug 20 10:51	12° $\text{♄}$ 51'41	
minimum elong	3297 Jun 10 05:28	21° $\text{♄}$ 10'33	1°31'21				
max. Earth dist.	3297 Jun 10 06:51	21° $\text{♄}$ 11'00	10.15030 AU	conjunction	3303 Sep 07 09:38	15° $\text{♄}$ 08'29	1°24'55
morning rise	3297 Jun 28 03:42	23° $\text{♄}$ 28'09		minimum elong	3303 Sep 07 09:35	15° $\text{♄}$ 08'28	1°24'55
	3297 Aug 29 04:46	0° $\text{♄}$		max. Earth dist.	3303 Sep 07 12:30	15° $\text{♄}$ 09'24	10.19627 AU
retrograde	3297 Oct 12 13:51	1° $\text{♄}$ 42'20		morning rise	3303 Sep 25 05:22	17° $\text{♄}$ 24'19	
	3297 Nov 26 12:04	30° $\text{♄}$		retrograde	3304 Jan 05 12:06	25° $\text{♄}$ 16'52	
opposition	3297 Dec 19 10:14	28° $\text{♄}$ 13'00	-1°-38'-27	opposition	3304 Mar 12 06:50	21° $\text{♄}$ 51'40	1°59'31
min. Earth dist.	3297 Dec 19 08:40	28° $\text{♄}$ 13'19	8.12058 AU	min. Earth dist.	3304 Mar 12 03:41	21° $\text{♄}$ 52'18	8.23797 AU
direct	3298 Feb 24 01:04	24° $\text{♄}$ 46'20		direct	3304 May 19 17:31	18° $\text{♄}$ 22'35	
	3298 May 14 22:49	0° $\text{♄}$		evening set	3304 Sep 02 21:46	26° $\text{♄}$ 27'15	
evening set	3298 Jun 07 00:01	2° $\text{♄}$ 47'50					
				conjunction	3304 Sep 20 16:41	28° $\text{♄}$ 41'40	1°46'19
conjunction	3298 Jun 24 23:07	5° $\text{♄}$ 06'21	-1°-5'-45	minimum elong	3304 Sep 20 16:38	28° $\text{♄}$ 41'39	1°46'18
minimum elong	3298 Jun 24 23:10	5° $\text{♄}$ 06'22	1°05'45	max. Earth dist.	3304 Sep 20 19:59	28° $\text{♄}$ 42'43	10.28232 AU
max. Earth dist.	3298 Jun 25 01:53	5° $\text{♄}$ 07'15	10.09552 AU		3304 Oct 01 00:09	0° $\text{♄}$	
morning rise	3298 Jul 13 00:38	7° $\text{♄}$ 25'41		morning rise	3304 Oct 08 07:41	0° $\text{♄}$ 54'53	
retrograde	3298 Oct 27 00:38	15° $\text{♄}$ 41'02		retrograde	3305 Jan 17 22:27	8° $\text{♄}$ 39'36	
opposition	3299 Jan 02 10:59	12° $\text{♄}$ 11'38	-1°-3'-50	opposition	3305 Mar 25 20:38	5° $\text{♄}$ 15'43	2°22'07
min. Earth dist.	3299 Jan 02 08:28	12° $\text{♄}$ 12'09	8.07726 AU	min. Earth dist.	3305 Mar 25 17:27	5° $\text{♄}$ 16'22	8.33135 AU
direct	3299 Mar 10 02:45	8° $\text{♄}$ 43'53		direct	3305 Jun 02 18:17	1° $\text{♄}$ 47'22	
evening set	3299 Jun 21 19:32	16° $\text{♄}$ 50'22		evening set	3305 Sep 17 00:22	9° $\text{♄}$ 46'25	
conjunction	3299 Jul 09 21:42	19° $\text{♄}$ 10'13	0°-36'-2	conjunction	3305 Oct 04 14:57	11° $\text{♄}$ 58'13	2°01'36
minimum elong	3299 Jul 09 21:43	19° $\text{♄}$ 10'14	0°36'03	minimum elong	3305 Oct 04 14:55	11° $\text{♄}$ 58'12	2°01'35
max. Earth dist.	3299 Jul 10 01:01	19° $\text{♄}$ 11'18	10.06484 AU	max. Earth dist.	3305 Oct 04 18:17	11° $\text{♄}$ 59'15	10.38122 AU
morning rise	3299 Jul 28 01:08	21° $\text{♄}$ 30'31		morning rise	3305 Oct 22 01:04	14° $\text{♄}$ 08'40	
retrograde	3299 Nov 10 11:03	29° $\text{♄}$ 44'47		retrograde	3306 Jan 31 01:17	21° $\text{♄}$ 45'16	
opposition	3300 Jan 16 12:50	26° $\text{♄}$ 15'41	0°-25'-8	opposition	3306 Apr 08 05:32	18° $\text{♄}$ 22'48	2°36'43
min. Earth dist.	3300 Jan 16 10:04	26° $\text{♄}$ 16'15	8.05925 AU	min. Earth dist.	3306 Apr 08 03:00	18° $\text{♄}$ 23'18	8.43485 AU
direct	3300 Mar 24 08:02	22° $\text{♄}$ 47'03		direct	3306 Jun 16 14:47	14° $\text{♄}$ 55'23	
	3300 Jun 29 05:18	0° $\text{♄}$		evening set	3306 Sep 30 17:32	22° $\text{♄}$ 47'42	
evening set	3300 Jul 06 18:41	0° $\text{♄}$ 56'56					
				conjunction	3306 Oct 18 03:39	24° $\text{♄}$ 56'48	2°10'18
conjunction	3300 Jul 24 22:19	3° $\text{♄}$ 17'17	0°-4'-7	minimum elong	3306 Oct 18 03:38	24° $\text{♄}$ 56'48	2°10'18
minimum elong	3300 Jul 24 22:20	3° $\text{♄}$ 17'17	0°04'08	max. Earth dist.	3306 Oct 18 06:20	24° $\text{♄}$ 57'38	10.48751 AU
behind sun begin	3300 Jul 24 15:05	3° $\text{♄}$ 14'58		morning rise	3306 Nov 04 09:11	27° $\text{♄}$ 04'32	
behind sun end	3300 Jul 25 05:36	3° $\text{♄}$ 19'37			3306 Nov 29 15:47	0° $\text{♄}$	



retrograde	3307 Feb 12 20:25	4°♄33'15		max. Earth dist.	3312 Dec 28 17:44	7°♄07'48	10.99633 AU
opposition	3307 Apr 21 09:39	1°♄12'07	2°43'04	morning rise	3313 Jan 14 13:01	9°♄06'32	
min. Earth dist.	3307 Apr 21 08:14	1°♄12'24	8.54294 AU	retrograde	3313 Apr 24 14:59	16°♄07'15	
	3307 May 07 02:41	30°♄		opposition	3313 Jul 03 15:33	12°♄49'52	1°01'56
direct	3307 Jun 30 06:18	27°♄45'49		min. Earth dist.	3313 Jul 03 18:27	12°♄49'20	9.01243 AU
	3307 Aug 22 02:43	0°♄		direct	3313 Sep 12 16:47	9°♄30'05	
evening set	3307 Oct 14 00:33	5°♄30'37		evening set	3313 Dec 23 16:05	16°♄36'20	
conjunction	3307 Oct 31 06:28	7°♄37'08	2°12'25	conjunction	3314 Jan 09 08:51	18°♄34'02	0°38'07
minimum elong	3307 Oct 31 06:28	7°♄37'08	2°12'26	minimum elong	3314 Jan 09 08:52	18°♄34'02	0°38'06
max. Earth dist.	3307 Oct 31 07:48	7°♄37'33	10.59576 AU	max. Earth dist.	3314 Jan 09 05:14	18°♄32'58	11.02262 AU
morning rise	3307 Nov 17 08:02	9°♄42'20		morning rise	3314 Jan 26 00:27	20°♄31'25	
	3308 Jan 07 04:15	15°♄		retrograde	3314 May 06 12:16	27°♄32'21	
retrograde	3308 Feb 25 09:52	17°♄03'42		opposition	3314 Jul 15 19:49	24°♄14'42	0°30'55
	3308 Apr 16 11:22	15°♄		min. Earth dist.	3314 Jul 15 22:25	24°♄14'13	9.02777 AU
opposition	3308 May 03 08:44	13°♄43'44	2°41'27	direct	3314 Sep 24 17:41	20°♄55'32	
min. Earth dist.	3308 May 03 07:53	13°♄43'54	8.65025 AU	evening set	3315 Jan 04 02:53	27°♄59'05	
direct	3308 Jul 12 15:10	10°♄18'40					
	3308 Sep 30 01:29	15°♄		conjunction	3315 Jan 20 19:06	29°♄56'33	0°12'12
evening set	3308 Oct 25 21:47	17°♄55'37		minimum elong	3315 Jan 20 19:07	29°♄56'34	0°12'13
				behind sun begin	3315 Jan 20 14:21	29°♄55'10	
conjunction	3308 Nov 12 00:06	19°♄59'48	2°08'16	behind sun end	3315 Jan 20 23:52	29°♄57'57	
minimum elong	3308 Nov 12 00:07	19°♄59'48	2°08'17	max. Earth dist.	3315 Jan 20 15:45	29°♄55'35	11.02741 AU
max. Earth dist.	3308 Nov 12 00:29	19°♄59'55	10.70077 AU		3315 Jan 21 06:48	0°≈	
morning rise	3308 Nov 28 22:24	22°♄02'45		morning rise	3315 Feb 06 10:46	1°≈53'57	
retrograde	3309 Mar 08 17:09	29°♄17'32		retrograde	3315 May 18 11:18	8°≈56'36	
opposition	3309 May 16 02:49	25°♄58'33	2°32'28	desc. node	3315 Jul 13 06:49	6°≈42'27	
min. Earth dist.	3309 May 16 02:07	25°♄58'41	8.75165 AU	opposition	3315 Jul 28 00:08	5°≈38'23	0°-1'-15
direct	3309 Jul 25 17:18	22°♄34'43		min. Earth dist.	3315 Jul 28 02:59	5°≈37'52	9.02179 AU
	3309 Nov 06 20:35	0°♄		direct	3315 Oct 06 16:27	2°≈19'36	
evening set	3309 Nov 07 09:51	0°♄03'55		evening set	3316 Jan 15 13:18	9°≈21'48	
conjunction	3309 Nov 24 09:18	2°♄06'05	1°58'26	conjunction	3316 Feb 01 05:09	11°≈19'24	0°-14'-16
minimum elong	3309 Nov 24 09:20	2°♄06'06	1°58'27	minimum elong	3316 Feb 01 05:08	11°≈19'23	0°14'16
max. Earth dist.	3309 Nov 24 09:26	2°♄06'07	10.79758 AU	behind sun begin	3316 Feb 01 01:40	11°≈18'23	
morning rise	3309 Dec 11 04:57	4°♄07'09		behind sun end	3316 Feb 01 08:36	11°≈20'24	
retrograde	3310 Mar 20 20:49	11°♄16'23		max. Earth dist.	3316 Feb 01 01:04	11°≈18'12	11.01098 AU
opposition	3310 May 28 16:42	7°♄58'09	2°17'00	morning rise	3316 Feb 17 21:23	13°≈17'08	
min. Earth dist.	3310 May 28 16:16	7°♄58'14	8.84238 AU		3316 Mar 04 02:27	15°≈	
direct	3310 Aug 07 14:03	4°♄35'31		retrograde	3316 May 29 12:27	20°≈22'54	
evening set	3310 Nov 19 13:52	11°♄57'27		opposition	3316 Aug 08 05:14	17°≈03'55	0°-33'-29
				min. Earth dist.	3316 Aug 08 08:48	17°≈03'15	8.99503 AU
conjunction	3310 Dec 06 10:56	13°♄57'56	1°43'39		3316 Sep 07 08:17	15°≈	
minimum elong	3310 Dec 06 10:58	13°♄57'57	1°43'40	direct	3316 Oct 17 13:48	13°≈45'14	
max. Earth dist.	3310 Dec 06 10:49	13°♄57'54	10.88158 AU		3316 Nov 25 19:11	15°≈	
morning rise	3310 Dec 23 04:34	15°♄57'28		evening set	3317 Jan 26 00:59	20°≈47'33	
retrograde	3311 Apr 01 21:51	23°♄02'23					
opposition	3311 Jun 10 02:58	19°♄44'42	1°56'03	conjunction	3317 Feb 11 16:44	22°≈45'33	0°-40'-13
min. Earth dist.	3311 Jun 10 03:44	19°♄44'33	8.91823 AU	minimum elong	3317 Feb 11 16:43	22°≈45'32	0°40'14
direct	3311 Aug 20 02:59	16°♄23'10		max. Earth dist.	3317 Feb 11 11:57	22°≈44'08	10.97412 AU
evening set	3311 Dec 01 11:14	23°♄38'39		morning rise	3317 Feb 28 09:52	24°≈43'57	
					3317 Apr 22 11:13	0°♄	
conjunction	3311 Dec 18 06:21	25°♄37'50	1°24'45	retrograde	3317 Jun 10 15:37	1°♄54'16	
minimum elong	3311 Dec 18 06:24	25°♄37'51	1°24'45		3317 Jul 31 15:02	30°≈	
max. Earth dist.	3311 Dec 18 04:38	25°♄37'19	10.94883 AU	opposition	3317 Aug 20 11:53	28°≈34'15	-1°-4'-38
morning rise	3312 Jan 03 22:49	27°♄36'16		min. Earth dist.	3317 Aug 20 15:41	28°≈33'33	8.94858 AU
	3312 Jan 25 09:59	0°♄		direct	3317 Oct 29 12:25	25°≈15'29	
retrograde	3312 Apr 12 18:06	4°♄38'17			3318 Jan 16 22:20	0°♄	
opposition	3312 Jun 21 10:16	1°♄20'54	1°30'40	evening set	3318 Feb 06 15:13	2°♄19'21	
min. Earth dist.	3312 Jun 21 12:30	1°♄20'29	8.97568 AU				
	3312 Jul 10 02:26	30°≈		conjunction	3318 Feb 23 07:26	4°♄18'07	-1°-4'-47
direct	3312 Aug 31 10:44	28°♄00'18		minimum elong	3318 Feb 23 07:24	4°♄18'06	1°04'48
	3312 Oct 21 02:44	0°♄		max. Earth dist.	3318 Feb 23 03:27	4°♄16'55	10.91829 AU
evening set	3312 Dec 12 03:25	5°♄10'33		morning rise	3318 Mar 12 01:40	6°♄17'30	
				retrograde	3318 Jun 23 01:31	13°♄33'40	
conjunction	3312 Dec 28 21:06	7°♄08'48	1°02'36	opposition	3318 Sep 01 21:11	10°♄12'28	-1°-33'-33
minimum elong	3312 Dec 28 21:08	7°♄08'48	1°02'36	min. Earth dist.	3318 Sep 02 00:05	10°♄11'55	8.88421 AU



direct	3318 Nov 10 12:52	6° <del>✕</del> 53'27		direct	3325 Jan 22 22:51	21° <del>♄</del> 39'28	
evening set	3319 Feb 18 09:28	14° <del>✕</del> 00'11		evening set	3325 May 04 07:11	29° <del>♄</del> 24'50	
					3325 May 08 23:10	0° <del>♄</del>	
conjunction	3319 Mar 07 02:37	16° <del>✕</del> 00'04	-1°-26'-58	conjunction	3325 May 21 19:06	1° <del>♄</del> 37'52	-1°-58'-17
minimum elong	3319 Mar 07 02:34	16° <del>✕</del> 00'03	1°26'59	minimum elong	3325 May 21 19:09	1° <del>♄</del> 37'53	1°58'19
max. Earth dist.	3319 Mar 06 23:35	15° <del>✕</del> 59'09	10.84551 AU	max. Earth dist.	3325 May 21 20:22	1° <del>♄</del> 38'16	10.25385 AU
morning rise	3319 Mar 23 22:19	18° <del>✕</del> 00'47		morning rise	3325 Jun 08 11:15	3° <del>♄</del> 52'16	
retrograde	3319 Jul 05 17:04	25° <del>✕</del> 23'54		retrograde	3325 Sep 23 05:22	12° <del>♄</del> 01'43	
opposition	3319 Sep 14 09:51	22° <del>✕</del> 01'26	-1°-59'00	opposition	3325 Nov 30 16:55	8° <del>♄</del> 32'51	-2°-17'-10
min. Earth dist.	3319 Sep 14 11:57	22° <del>✕</del> 01'02	8.80423 AU	min. Earth dist.	3325 Nov 30 15:12	8° <del>♄</del> 33'12	8.21306 AU
direct	3319 Nov 22 13:27	18° <del>✕</del> 41'58		direct	3326 Feb 05 09:17	5° <del>♄</del> 07'55	
evening set	3320 Mar 01 09:25	25° <del>✕</del> 52'57		evening set	3326 May 18 09:59	13° <del>♄</del> 00'42	
conjunction	3320 Mar 18 03:54	27° <del>✕</del> 54'17	-1°-45'-45	conjunction	3326 Jun 05 02:41	15° <del>♄</del> 16'16	-1°-41'-1
minimum elong	3320 Mar 18 03:52	27° <del>✕</del> 54'16	1°45'46	minimum elong	3326 Jun 05 02:44	15° <del>♄</del> 16'17	1°41'02
max. Earth dist.	3320 Mar 18 00:52	27° <del>✕</del> 53'21	10.75854 AU	max. Earth dist.	3326 Jun 05 04:31	15° <del>♄</del> 16'51	10.17464 AU
morning rise	3320 Apr 04 01:41	29° <del>✕</del> 56'39		morning rise	3326 Jun 22 23:16	17° <del>♄</del> 33'05	
	3320 Apr 04 12:59	0° <del>♄</del>		retrograde	3326 Oct 07 14:48	25° <del>♄</del> 46'41	
retrograde	3320 Jul 17 14:04	7° <del>♄</del> 27'34		opposition	3326 Dec 14 14:28	22° <del>♄</del> 17'32	-1°-51'-57
opposition	3320 Sep 26 02:29	4° <del>♄</del> 03'48	-2°-19'-48	min. Earth dist.	3326 Dec 14 12:29	22° <del>♄</del> 17'56	8.14267 AU
min. Earth dist.	3320 Sep 26 04:27	4° <del>♄</del> 03'25	8.71166 AU	direct	3327 Feb 19 04:12	18° <del>♄</del> 51'32	
direct	3320 Dec 03 18:38	0° <del>♄</del> 43'42		evening set	3327 Jun 01 21:02	26° <del>♄</del> 50'59	
evening set	3321 Mar 13 16:03	8° <del>♄</del> 00'09		conjunction	3327 Jun 19 18:12	29° <del>♄</del> 08'45	-1°-17'-41
conjunction	3321 Mar 30 12:30	10° <del>♄</del> 03'16	-2°00'-12	minimum elong	3327 Jun 19 18:16	29° <del>♄</del> 08'46	1°17'43
minimum elong	3321 Mar 30 12:28	10° <del>♄</del> 03'16	2°00'12	max. Earth dist.	3327 Jun 19 20:40	29° <del>♄</del> 09'32	10.11475 AU
max. Earth dist.	3321 Mar 30 09:15	10° <del>♄</del> 02'17	10.66082 AU		3327 Jun 26 08:55	0° <del>♄</del>	
morning rise	3321 Apr 16 12:59	12° <del>♄</del> 07'38		morning rise	3327 Jul 07 18:34	1° <del>♄</del> 27'30	
retrograde	3321 Jul 30 18:14	19° <del>♄</del> 46'56		retrograde	3327 Oct 22 00:54	9° <del>♄</del> 43'07	
opposition	3321 Oct 09 00:02	16° <del>♄</del> 21'52	-2°-34'-44	opposition	3327 Dec 28 15:00	6° <del>♄</del> 14'00	-1°-19'-47
min. Earth dist.	3321 Oct 09 02:03	16° <del>♄</del> 21'29	8.61029 AU	min. Earth dist.	3327 Dec 28 12:42	6° <del>♄</del> 14'28	8.09359 AU
direct	3321 Dec 16 04:31	13° <del>♄</del> 01'00		direct	3328 Mar 04 05:04	2° <del>♄</del> 47'03	
evening set	3322 Mar 26 06:15	20° <del>♄</del> 23'52		evening set	3328 Jun 15 14:42	10° <del>♄</del> 51'56	
conjunction	3322 Apr 12 05:34	22° <del>♄</del> 29'07	-2°-9'-21	conjunction	3328 Jul 03 15:29	13° <del>♄</del> 11'18	0°-49'-33
minimum elong	3322 Apr 12 05:33	22° <del>♄</del> 29'07	2°09'21	minimum elong	3328 Jul 03 15:31	13° <del>♄</del> 11'19	0°49'34
max. Earth dist.	3322 Apr 12 03:19	22° <del>♄</del> 28'26	10.55651 AU	max. Earth dist.	3328 Jul 03 18:49	13° <del>♄</del> 12'23	10.07783 AU
morning rise	3322 Apr 29 09:16	24° <del>♄</del> 35'45		morning rise	3328 Jul 21 18:22	15° <del>♄</del> 31'19	
	3322 Jun 19 13:01	0° <del>♄</del>		retrograde	3328 Nov 04 11:44	23° <del>♄</del> 46'42	
retrograde	3322 Aug 13 04:37	2° <del>♄</del> 23'37		opposition	3329 Jan 10 17:07	20° <del>♄</del> 17'53	0°-42'-33
	3322 Oct 08 12:21	30° <del>♄</del>		min. Earth dist.	3329 Jan 10 14:09	20° <del>♄</del> 18'29	8.06888 AU
opposition	3322 Oct 22 02:39	28° <del>♄</del> 57'19	-2°-42'-41	direct	3329 Mar 18 09:56	16° <del>♄</del> 50'06	
min. Earth dist.	3322 Oct 22 03:57	28° <del>♄</del> 57'04	8.50457 AU	evening set	3329 Jun 30 12:57	24° <del>♄</del> 58'52	
direct	3322 Dec 28 20:21	25° <del>♄</del> 35'32		conjunction	3329 Jul 18 16:05	27° <del>♄</del> 19'04	0°-18'-19
	3323 Mar 12 12:32	0° <del>♄</del>		minimum elong	3329 Jul 18 16:06	27° <del>♄</del> 19'05	0°18'20
evening set	3323 Apr 08 05:17	3° <del>♄</del> 05'36		max. Earth dist.	3329 Jul 18 20:24	27° <del>♄</del> 20'28	10.06609 AU
conjunction	3323 Apr 25 08:17	5° <del>♄</del> 13'18	-2°-12'-25	morning rise	3329 Aug 05 19:59	29° <del>♄</del> 39'31	
minimum elong	3323 Apr 25 08:17	5° <del>♄</del> 13'18	2°12'25		3329 Aug 08 12:46	0° <del>♄</del>	
max. Earth dist.	3323 Apr 25 07:33	5° <del>♄</del> 13'04	10.45034 AU	retrograde	3329 Nov 18 21:23	7° <del>♄</del> 52'25	
morning rise	3323 May 12 15:42	7° <del>♄</del> 22'25		opposition	3330 Jan 24 19:28	4° <del>♄</del> 24'09	0°-2'-38
	3323 Aug 07 23:37	15° <del>♄</del>		min. Earth dist.	3330 Jan 24 15:47	4° <del>♄</del> 24'54	8.06981 AU
retrograde	3323 Aug 26 21:59	15° <del>♄</del> 18'30		asc. node	3330 Feb 18 16:53	2° <del>♄</del> 28'17	
	3323 Sep 14 23:33	15° <del>♄</del>		direct	3330 Apr 01 17:31	0° <del>♄</del> 55'42	
opposition	3323 Nov 04 10:18	11° <del>♄</del> 51'06	-2°-42'-43	evening set	3330 Jul 15 13:17	9° <del>♄</del> 06'36	
min. Earth dist.	3323 Nov 04 10:25	11° <del>♄</del> 51'05	8.39948 AU	conjunction	3330 Aug 02 17:08	11° <del>♄</del> 26'46	0°14'04
direct	3324 Jan 10 19:04	8° <del>♄</del> 28'19		minimum elong	3330 Aug 02 17:08	11° <del>♄</del> 26'45	0°14'04
	3324 Apr 11 13:11	15° <del>♄</del>		behind sun begin	3330 Aug 02 13:42	11° <del>♄</del> 25'39	
evening set	3324 Apr 20 13:35	16° <del>♄</del> 06'01		behind sun end	3330 Aug 02 20:33	11° <del>♄</del> 27'51	
conjunction	3324 May 07 20:52	18° <del>♄</del> 16'22	-2°-8'-49	max. Earth dist.	3330 Aug 02 21:47	11° <del>♄</del> 28'15	10.07963 AU
minimum elong	3324 May 07 20:54	18° <del>♄</del> 16'22	2°08'50	morning rise	3330 Aug 20 20:23	13° <del>♄</del> 46'45	
max. Earth dist.	3324 May 07 21:26	18° <del>♄</del> 16'32	10.34759 AU		3330 Aug 30 15:00	15° <del>♄</del>	
morning rise	3324 May 25 08:30	20° <del>♄</del> 28'07		retrograde	3330 Dec 03 04:07	21° <del>♄</del> 55'15	
retrograde	3324 Sep 08 22:55	28° <del>♄</del> 31'34		opposition	3331 Feb 07 20:47	18° <del>♄</del> 27'46	0°37'17
opposition	3324 Nov 16 23:12	25° <del>♄</del> 03'18	-2°-34'-16	min. Earth dist.	3331 Feb 07 17:05	18° <del>♄</del> 28'31	8.09531 AU
min. Earth dist.	3324 Nov 16 22:06	25° <del>♄</del> 03'31	8.30043 AU				



	3331 Apr 11 15:59	15°♈♌		opposition	3337 Apr 28 03:56	8°♌36'35	2°43'05
direct	3331 Apr 16 02:57	14°♌58'54		min. Earth dist.	3337 Apr 28 02:41	8°♌36'50	8.59571 AU
	3331 Apr 20 14:01	15°♌		direct	3337 Jul 07 06:30	5°♌10'45	
evening set	3331 Jul 30 12:57	23°♌10'08		evening set	3337 Oct 20 18:30	12°♌51'28	
conjunction	3331 Aug 17 15:47	25°♌29'24	0°45'23	conjunction	3337 Nov 06 22:37	14°♌56'47	2°10'47
minimum elong	3331 Aug 17 15:44	25°♌29'23	0°45'23	minimum elong	3337 Nov 06 22:38	14°♌56'48	2°10'47
max. Earth dist.	3331 Aug 17 19:57	25°♌30'44	10.11634 AU	max. Earth dist.	3337 Nov 06 23:35	14°♌57'05	10.64575 AU
morning rise	3331 Sep 04 16:43	27°♌48'06			3337 Nov 07 09:06	15°♌	
	3331 Sep 22 15:37	0°♐		morning rise	3337 Nov 23 22:14	17°♌00'48	
retrograde	3331 Dec 17 05:02	5°♐50'48		retrograde	3338 Mar 03 20:30	24°♌18'42	
opposition	3332 Feb 21 19:54	2°♐24'22	1°14'39	opposition	3338 May 11 00:23	20°♌58'58	2°37'13
min. Earth dist.	3332 Feb 21 16:49	2°♐24'59	8.14278 AU	min. Earth dist.	3338 May 11 00:13	20°♌58'59	8.69685 AU
	3332 Mar 25 09:55	30°♈♌		direct	3338 Jul 20 11:05	17°♌34'11	
direct	3332 Apr 29 12:10	28°♌55'23		evening set	3338 Nov 02 10:47	25°♌07'05	
	3332 Jun 03 10:20	0°♐					
evening set	3332 Aug 13 09:21	7°♐05'15		conjunction	3338 Nov 19 11:32	27°♌10'14	2°03'20
				minimum elong	3338 Nov 19 11:33	27°♌10'15	2°03'21
conjunction	3332 Aug 31 09:38	9°♐22'55	1°13'46	max. Earth dist.	3338 Nov 19 11:21	27°♌10'11	10.74363 AU
minimum elong	3332 Aug 31 09:35	9°♐22'54	1°13'46	morning rise	3338 Dec 06 08:17	29°♌12'14	
max. Earth dist.	3332 Aug 31 12:57	9°♐23'58	10.17362 AU		3338 Dec 13 02:52	0°♐	
morning rise	3332 Sep 18 07:03	11°♐39'41		retrograde	3339 Mar 16 00:46	6°♐24'04	
retrograde	3332 Dec 30 00:26	19°♐35'37		opposition	3339 May 23 16:21	3°♐05'05	2°24'28
opposition	3333 Mar 06 16:01	16°♐10'21	1°47'10	min. Earth dist.	3339 May 23 17:02	3°♐04'58	8.79024 AU
min. Earth dist.	3333 Mar 06 13:53	16°♐10'47	8.20974 AU		3339 Jul 13 21:42	30°♈♌	
direct	3333 May 13 19:19	12°♐41'32		direct	3339 Aug 02 10:51	29°♌41'24	
evening set	3333 Aug 28 00:01	20°♐48'16			3339 Aug 21 21:55	0°♐	
				evening set	3339 Nov 14 18:11	7°♐06'47	
conjunction	3333 Sep 14 20:41	23°♐03'47	1°37'35				
minimum elong	3333 Sep 14 20:38	23°♐03'46	1°37'34	conjunction	3339 Dec 01 16:12	9°♐08'06	1°50'36
max. Earth dist.	3333 Sep 14 22:49	23°♐04'28	10.24895 AU	minimum elong	3339 Dec 01 16:14	9°♐08'07	1°50'36
morning rise	3333 Oct 02 13:49	25°♐18'10		max. Earth dist.	3339 Dec 01 15:00	9°♐07'44	10.83182 AU
	3333 Nov 13 06:54	0°♑		morning rise	3339 Dec 18 10:53	11°♐08'25	
retrograde	3334 Jan 12 13:21	3°♑06'34		retrograde	3340 Mar 27 01:44	18°♐15'23	
	3334 Mar 16 17:11	30°♈♐		opposition	3340 Jun 04 04:09	14°♐56'58	2°05'45
opposition	3334 Mar 20 08:14	29°♐42'31	2°13'05	min. Earth dist.	3340 Jun 04 04:57	14°♐56'49	8.87198 AU
min. Earth dist.	3334 Mar 20 06:43	29°♐42'49	8.29313 AU	direct	3340 Aug 14 03:45	11°♐34'22	
direct	3334 May 27 23:33	26°♐14'09		evening set	3340 Nov 25 18:16	18°♐52'55	
	3334 Aug 04 17:20	0°♑					
evening set	3334 Sep 11 07:09	4°♑16'05		conjunction	3340 Dec 12 14:17	20°♐52'46	1°33'22
				minimum elong	3340 Dec 12 14:19	20°♐52'46	1°33'22
conjunction	3334 Sep 28 23:32	6°♑29'04	1°55'38	max. Earth dist.	3340 Dec 12 12:58	20°♐52'22	10.90672 AU
minimum elong	3334 Sep 28 23:29	6°♑29'03	1°55'38	morning rise	3340 Dec 29 07:24	22°♐51'47	
max. Earth dist.	3334 Sep 29 00:44	6°♑29'27	10.33870 AU	retrograde	3341 Apr 07 23:47	29°♐55'10	
morning rise	3334 Oct 16 11:56	8°♑40'48		opposition	3341 Jun 16 12:22	26°♐37'06	1°42'09
retrograde	3335 Jan 25 18:31	16°♑21'14		min. Earth dist.	3341 Jun 16 12:55	26°♐37'00	8.93877 AU
opposition	3335 Apr 02 19:47	12°♑58'25	2°31'16	direct	3341 Aug 26 14:39	23°♐15'34	
min. Earth dist.	3335 Apr 02 18:23	12°♑58'42	8.38865 AU		3341 Dec 03 10:46	0°♑	
direct	3335 Jun 11 00:16	9°♑30'43		evening set	3341 Dec 07 12:28	0°♑28'14	
evening set	3335 Sep 25 05:00	17°♑26'26					
				conjunction	3341 Dec 24 06:58	2°♑26'58	1°12'31
conjunction	3335 Oct 12 17:01	19°♑36'46	2°07'16	minimum elong	3341 Dec 24 07:00	2°♑26'58	1°12'31
minimum elong	3335 Oct 12 16:59	19°♑36'46	2°07'15	max. Earth dist.	3341 Dec 24 05:56	2°♑26'39	10.96532 AU
max. Earth dist.	3335 Oct 12 17:58	19°♑37'04	10.43825 AU	morning rise	3342 Jan 09 23:02	4°♑25'03	
morning rise	3335 Oct 30 00:42	21°♑45'46		retrograde	3342 Apr 19 22:07	11°♑26'16	
retrograde	3336 Feb 07 16:47	29°♑18'17		opposition	3342 Jun 28 18:21	8°♑08'25	1°14'43
opposition	3336 Apr 15 02:26	25°♑56'35	2°41'15	min. Earth dist.	3342 Jun 28 19:21	8°♑08'14	8.98811 AU
min. Earth dist.	3336 Apr 15 00:52	25°♑56'54	8.49129 AU	direct	3342 Sep 07 20:38	4°♑47'52	
direct	3336 Jun 23 19:14	22°♑29'46		evening set	3342 Dec 19 02:17	11°♑55'44	
	3336 Oct 05 04:14	0°♌					
evening set	3336 Oct 07 16:41	0°♌18'14		conjunction	3343 Jan 04 19:31	13°♑53'42	0°48'56
				minimum elong	3343 Jan 04 19:32	13°♑53'42	0°48'56
conjunction	3336 Oct 25 00:35	2°♌25'58	2°12'15	max. Earth dist.	3343 Jan 04 17:47	13°♑53'11	11.00545 AU
minimum elong	3336 Oct 25 00:34	2°♌25'58	2°12'15	morning rise	3343 Jan 21 11:09	15°♑51'14	
max. Earth dist.	3336 Oct 25 01:44	2°♌26'19	10.54236 AU	retrograde	3343 May 01 17:33	22°♑51'47	
morning rise	3336 Nov 11 03:55	4°♌32'21		opposition	3343 Jul 10 22:49	19°♑33'54	0°44'34
retrograde	3337 Feb 19 09:59	11°♌57'15		min. Earth dist.	3343 Jul 11 00:43	19°♑33'33	9.01826 AU



direct	3343 Sep 19 21:24	16°☾14'10			3349 May 18 18:40	0°♊	
evening set	3343 Dec 30 13:25	23°☾18'35		retrograde	3349 Jul 12 03:30	2°♊18'57	
					3349 Sep 06 14:13	30°♊♋	
conjunction	3344 Jan 16 05:44	25°☾16'05	0°23'34	opposition	3349 Sep 20 19:36	28°♋56'32	-2°-10'-56
minimum elong	3344 Jan 16 05:45	25°☾16'05	0°23'34	min. Earth dist.	3349 Sep 20 21:22	28°♋56'12	8.78619 AU
max. Earth dist.	3344 Jan 16 02:55	25°☾15'15	11.02572 AU	direct	3349 Nov 28 18:05	25°♋37'31	
morning rise	3344 Feb 01 21:28	27°☾13'25			3350 Feb 11 11:04	0°♊	
	3344 Feb 27 05:41	0°♋		evening set	3350 Mar 08 13:10	2°♊50'01	
retrograde	3344 May 12 14:00	4°♋14'49					
opposition	3344 Jul 22 02:25	0°♋56'40	0°12'48	conjunction	3350 Mar 25 08:32	4°♊51'53	-1°-54'-12
min. Earth dist.	3344 Jul 22 04:39	0°♋56'16	9.02815 AU	minimum elong	3350 Mar 25 08:30	4°♊51'52	1°54'13
	3344 Aug 04 01:31	30°♊☾		max. Earth dist.	3350 Mar 25 06:58	4°♊51'24	10.73922 AU
direct	3344 Sep 30 21:49	27°☾37'35		morning rise	3350 Apr 11 07:23	6°♊54'51	
	3344 Nov 25 02:13	0°♋		retrograde	3350 Jul 25 04:33	14°♊28'48	
desc. node	3344 Dec 18 16:42	2°♋12'13		opposition	3350 Oct 03 13:55	11°♊05'06	-2°-28'-31
evening set	3345 Jan 09 23:21	4°♋39'54		min. Earth dist.	3350 Oct 03 14:57	11°♊04'54	8.69140 AU
				direct	3350 Dec 11 00:45	7°♊45'25	
conjunction	3345 Jan 26 15:16	6°♋37'18	0°-2'-47	evening set	3351 Mar 20 22:55	15°♊03'40	
minimum elong	3345 Jan 26 15:16	6°♋37'18	0°02'47				
behind sun begin	3345 Jan 26 08:19	6°♋35'16		conjunction	3351 Apr 06 20:42	17°♊07'28	-2°-5'-46
behind sun end	3345 Jan 26 22:14	6°♋39'20		minimum elong	3351 Apr 06 20:41	17°♊07'27	2°05'47
max. Earth dist.	3345 Jan 26 12:42	6°♋36'36	11.02533 AU	max. Earth dist.	3351 Apr 06 18:54	17°♊06'55	10.63920 AU
morning rise	3345 Feb 12 07:17	8°♋34'46		morning rise	3351 Apr 23 22:29	19°♊12'33	
	3345 Apr 26 11:18	15°♋		retrograde	3351 Aug 07 12:00	26°♊54'49	
retrograde	3345 May 24 14:27	15°♋38'28		opposition	3351 Oct 16 13:05	23°♊29'51	-2°-39'-40
	3345 Jun 22 03:30	15°♊♋		min. Earth dist.	3351 Oct 16 14:08	23°♊29'39	8.58753 AU
opposition	3345 Aug 03 06:23	12°♋19'51	0°-19'-28	direct	3351 Dec 23 11:27	20°♊09'17	
min. Earth dist.	3345 Aug 03 08:06	12°♋19'32	9.01733 AU	evening set	3352 Apr 01 16:58	27°♊34'21	
direct	3345 Oct 12 19:51	9°♋01'14					
	3346 Jan 12 05:36	15°♋		conjunction	3352 Apr 18 17:51	29°♊40'25	-2°-11'-39
evening set	3346 Jan 21 09:40	16°♋02'49		minimum elong	3352 Apr 18 17:51	29°♊40'25	2°11'39
				max. Earth dist.	3352 Apr 18 15:28	29°♊39'41	10.53241 AU
conjunction	3346 Feb 07 01:28	18°♋00'27	0°-28'-57		3352 Apr 21 08:56	0°♊	
minimum elong	3346 Feb 07 01:27	18°♋00'27	0°28'58	morning rise	3352 May 05 23:14	1°♊47'54	
max. Earth dist.	3346 Feb 06 23:31	17°♋59'53	11.00420 AU	retrograde	3352 Aug 20 00:47	9°♊38'31	
morning rise	3346 Feb 23 17:58	19°♋58'21		opposition	3352 Oct 28 17:18	6°♊12'22	-2°-43'-24
retrograde	3346 Jun 05 16:39	27°♋05'50		min. Earth dist.	3352 Oct 28 18:37	6°♊12'07	8.47946 AU
opposition	3346 Aug 15 11:42	23°♋46'31	0°-51'-8	direct	3353 Jan 04 05:58	2°♊50'43	
min. Earth dist.	3346 Aug 15 13:03	23°♋46'16	8.98622 AU	evening set	3353 Apr 14 19:47	10°♊23'16	
direct	3346 Oct 24 16:25	20°♋28'11					
evening set	3347 Feb 01 22:07	27°♋30'28		conjunction	3353 May 02 00:37	12°♊31'54	-2°-11'-9
				minimum elong	3353 May 02 00:38	12°♊31'55	2°11'10
conjunction	3347 Feb 18 14:01	29°♋28'39	0°-54'-11	max. Earth dist.	3353 May 01 22:26	12°♊31'13	10.42457 AU
minimum elong	3347 Feb 18 14:00	29°♋28'38	0°54'12	morning rise	3353 May 19 10:08	14°♊42'00	
max. Earth dist.	3347 Feb 18 11:41	29°♋27'57	10.96326 AU		3353 May 21 20:57	15°♊	
	3347 Feb 22 23:24	0°♋		retrograde	3353 Sep 02 20:41	22°♊40'29	
morning rise	3347 Mar 07 07:31	1°♋27'20		opposition	3353 Nov 11 02:50	19°♊13'13	-2°-38'-56
retrograde	3347 Jun 18 00:00	8°♋39'53		min. Earth dist.	3353 Nov 11 03:59	19°♊12'59	8.37334 AU
opposition	3347 Aug 27 19:11	5°♋19'42	-1°-21'-3	direct	3354 Jan 17 06:46	15°♊50'22	
min. Earth dist.	3347 Aug 27 21:04	5°♋19'21	8.93610 AU	evening set	3354 Apr 28 07:44	23°♊30'39	
direct	3347 Nov 05 14:19	2°♋01'21					
evening set	3348 Feb 13 13:58	9°♋05'45		conjunction	3354 May 15 17:13	25°♊41'59	-2°-3'-52
				minimum elong	3354 May 15 17:15	25°♊42'00	2°03'53
conjunction	3348 Mar 01 06:23	11°♋04'48	-1°-17'-27	max. Earth dist.	3354 May 15 16:20	25°♊41'43	10.32183 AU
minimum elong	3348 Mar 01 06:21	11°♋04'48	1°17'29	morning rise	3354 Jun 02 07:09	27°♊54'46	
max. Earth dist.	3348 Mar 01 03:25	11°♋03'55	10.90404 AU		3354 Jun 19 14:50	0°♊	
morning rise	3348 Mar 18 01:21	13°♋04'37		retrograde	3354 Sep 16 22:19	6°♊00'02	
retrograde	3348 Jun 29 10:52	20°♋23'23		opposition	3354 Nov 24 17:12	2°♊31'50	-2°-25'-55
opposition	3348 Sep 08 05:35	17°♋02'10	-1°-48'-3	min. Earth dist.	3354 Nov 24 17:30	2°♊31'46	8.27522 AU
min. Earth dist.	3348 Sep 08 07:47	17°♋01'45	8.86867 AU		3354 Dec 30 07:39	30°♊♋	
direct	3348 Nov 16 13:27	13°♋43'36		direct	3355 Jan 30 14:26	29°♊07'43	
evening set	3349 Feb 24 10:32	20°♋51'27			3355 Mar 02 11:46	0°♊	
				evening set	3355 May 12 05:06	6°♊55'38	
conjunction	3349 Mar 13 04:06	22°♋51'43	-1°-37'-46				
minimum elong	3349 Mar 13 04:04	22°♋51'42	1°37'48	conjunction	3355 May 29 19:30	9°♊09'40	-1°-49'-46
max. Earth dist.	3349 Mar 13 01:38	22°♋50'59	10.82849 AU	minimum elong	3355 May 29 19:33	9°♊09'41	1°49'47
morning rise	3349 Mar 30 00:46	24°♋52'57		max. Earth dist.	3355 May 29 20:03	9°♊09'51	10.23003 AU



morning rise	3355 Jun 16 13:51	11°II25'01			3361 Aug 01 02:29	0°mp	
retrograde	3355 Oct 01 04:24	19°II35'28		evening set	3361 Aug 06 16:32	0°mp41'54	
opposition	3355 Dec 08 11:42	16°II06'36	-2°-4'-33				
min. Earth dist.	3355 Dec 08 10:51	16°II06'46	8.19069 AU	conjunction	3361 Aug 24 18:15	3°mp00'32	1°00'37
direct	3356 Feb 13 04:48	12°II41'12		minimum elong	3361 Aug 24 18:12	3°mp00'31	1°00'36
evening set	3356 May 25 11:08	20°II36'17		max. Earth dist.	3361 Aug 24 21:10	3°mp01'28	10.13122 AU
				morning rise	3361 Sep 11 17:46	5°mp18'28	
conjunction	3356 Jun 12 06:15	22°II52'47	-1°-29'-16	retrograde	3361 Dec 23 18:51	13°mp18'05	
minimum elong	3356 Jun 12 06:18	22°II52'48	1°29'17	opposition	3362 Feb 28 11:11	9°mp51'39	1°32'17
max. Earth dist.	3356 Jun 12 07:50	22°II53'18	10.15451 AU	min. Earth dist.	3362 Feb 28 08:13	9°mp52'15	8.16283 AU
morning rise	3356 Jun 30 04:37	25°II10'22		direct	3362 May 07 10:00	6°mp22'10	
	3356 Aug 11 10:51	0°☾		evening set	3362 Aug 21 10:08	14°mp30'51	
retrograde	3356 Oct 14 13:49	3°☾24'07					
	3356 Dec 20 08:47	30°RII		conjunction	3362 Sep 08 08:50	16°mp47'35	1°26'47
opposition	3356 Dec 21 09:51	29°II54'52	-1°-35'-37	minimum elong	3362 Sep 08 08:47	16°mp47'34	1°26'46
min. Earth dist.	3356 Dec 21 08:09	29°II55'13	8.12479 AU	max. Earth dist.	3362 Sep 08 12:08	16°mp48'39	10.19866 AU
direct	3357 Feb 26 00:24	26°II28'15		morning rise	3362 Sep 26 04:14	19°mp03'18	
	3357 May 01 05:17	0°☾		retrograde	3363 Jan 06 11:33	26°mp55'40	
evening set	3357 Jun 09 00:30	4°☾29'35		opposition	3363 Mar 14 05:12	23°mp30'28	2°01'32
				min. Earth dist.	3363 Mar 14 02:06	23°mp31'06	8.23990 AU
conjunction	3357 Jun 26 23:41	6°☾48'04	-1°-3'-20	direct	3363 May 21 15:12	20°mp01'24	
minimum elong	3357 Jun 26 23:44	6°☾48'05	1°03'21	evening set	3363 Sep 04 20:53	28°mp06'00	
max. Earth dist.	3357 Jun 27 01:55	6°☾48'47	10.09980 AU		3363 Sep 19 23:27	0°☾	
morning rise	3357 Jul 15 01:18	9°☾07'21					
retrograde	3357 Oct 29 01:10	17°☾22'15		conjunction	3363 Sep 22 15:37	0°☾20'21	1°47'42
opposition	3358 Jan 04 10:27	13°☾52'59	-1°00'-41	minimum elong	3363 Sep 22 15:34	0°☾20'20	1°47'41
min. Earth dist.	3358 Jan 04 08:24	13°☾53'24	8.08152 AU	max. Earth dist.	3363 Sep 22 19:03	0°☾21'26	10.28370 AU
direct	3358 Mar 12 01:30	10°☾25'15		morning rise	3363 Oct 10 06:16	2°☾33'29	
evening set	3358 Jun 23 19:53	18°☾31'35		retrograde	3364 Jan 19 21:02	10°☾18'03	
				opposition	3364 Mar 26 19:01	6°☾54'12	2°23'31
conjunction	3358 Jul 11 22:01	20°☾51'23	0°-33'-26	min. Earth dist.	3364 Mar 26 16:28	6°☾54'42	8.33226 AU
minimum elong	3358 Jul 11 22:03	20°☾51'23	0°33'27	direct	3364 Jun 03 16:57	3°☾25'49	
max. Earth dist.	3358 Jul 12 00:15	20°☾52'06	10.06915 AU	evening set	3364 Sep 17 23:15	11°☾24'50	
morning rise	3358 Jul 30 01:35	23°☾11'38					
	3358 Oct 03 11:39	0°♈		conjunction	3364 Oct 05 13:32	13°☾36'33	2°02'27
retrograde	3358 Nov 12 11:17	1°♈25'27		minimum elong	3364 Oct 05 13:30	13°☾36'33	2°02'26
	3358 Dec 22 17:49	30°R☾		max. Earth dist.	3364 Oct 05 16:17	13°☾37'25	10.38156 AU
opposition	3359 Jan 18 12:04	27°☾56'29	0°-21'-51	morning rise	3364 Oct 22 23:25	15°☾46'58	
min. Earth dist.	3359 Jan 18 10:12	27°☾56'52	8.06349 AU	retrograde	3365 Jan 31 22:55	23°☾23'31	
direct	3359 Mar 26 07:25	24°☾27'51		opposition	3365 Apr 09 03:59	20°☾01'03	2°37'26
	3359 Jun 17 06:34	0°♈		min. Earth dist.	3365 Apr 09 02:16	20°☾01'23	8.43478 AU
evening set	3359 Jul 08 18:52	2°♈37'38		direct	3365 Jun 17 13:54	16°☾33'36	
				evening set	3365 Oct 01 16:05	24°☾25'54	
conjunction	3359 Jul 26 22:26	4°♈57'54	0°-1'-27				
minimum elong	3359 Jul 26 22:28	4°♈57'54	0°01'29	conjunction	3365 Oct 19 01:57	26°☾34'58	2°10'35
behind sun begin	3359 Jul 26 15:06	4°♈55'32		minimum elong	3365 Oct 19 01:56	26°☾34'57	2°10'36
behind sun end	3359 Jul 27 05:50	5°♈00'16		max. Earth dist.	3365 Oct 19 03:35	26°☾35'28	10.48690 AU
max. Earth dist.	3359 Jul 27 00:40	4°♈58'33	10.06432 AU	morning rise	3365 Nov 05 07:25	28°☾42'40	
asc. node	3359 Aug 12 16:27	7°♈07'28			3365 Nov 16 01:52	0°♈	
morning rise	3359 Aug 14 02:20	7°♈18'14		retrograde	3366 Feb 13 18:39	6°♈11'25	
	3359 Nov 03 21:23	15°♈		opposition	3366 Apr 22 08:04	2°♈50'15	2°43'05
retrograde	3359 Nov 26 18:22	15°♈28'57		min. Earth dist.	3366 Apr 22 06:54	2°♈50'28	8.54190 AU
	3359 Dec 19 15:38	15°R♈			3366 Jun 04 06:05	30°R☾	
opposition	3360 Feb 01 13:40	12°♈00'35	0°18'20	direct	3366 Jul 01 04:53	29°☾23'55	
min. Earth dist.	3360 Feb 01 11:40	12°♈01'00	8.07172 AU		3366 Jul 28 00:51	0°♈	
direct	3360 Apr 08 16:46	8°♈31'21		evening set	3366 Oct 14 22:59	7°♈08'44	
	3360 Jul 08 22:52	15°♈					
evening set	3360 Jul 22 18:33	16°♈42'42		conjunction	3366 Nov 01 04:45	9°♈15'15	2°12'09
				minimum elong	3366 Nov 01 04:45	9°♈15'16	2°12'09
conjunction	3360 Aug 09 21:59	19°♈02'33	0°30'37	max. Earth dist.	3366 Nov 01 05:32	9°♈15'30	10.59423 AU
minimum elong	3360 Aug 09 21:57	19°♈02'33	0°30'37	morning rise	3366 Nov 18 06:16	11°♈20'27	
max. Earth dist.	3360 Aug 10 00:31	19°♈03'23	10.08547 AU		3366 Dec 20 22:59	15°♈	
morning rise	3360 Aug 28 00:26	21°♈22'05		retrograde	3367 Feb 26 07:28	18°♈41'55	
retrograde	3360 Dec 09 20:34	29°♈27'57		opposition	3367 May 05 07:10	15°♈21'54	2°40'47
opposition	3361 Feb 14 13:47	26°♈00'28	0°57'12	min. Earth dist.	3367 May 05 05:52	15°♈22'09	8.64826 AU
min. Earth dist.	3361 Feb 14 11:19	26°♈00'58	8.10558 AU		3367 May 10 00:55	15°R♈	
direct	3361 Apr 23 02:21	22°♈30'56		direct	3367 Jul 14 14:07	11°♈56'49	



	3367 Sep 15 08:00	15°♄		evening set	3374 Jan 05 01:38	29°♄38'41	
evening set	3367 Oct 27 20:04	19°♄33'49			3374 Jan 08 03:03	0°♄	
conjunction	3367 Nov 13 22:24	21°♄38'01	2°07'27	conjunction	3374 Jan 21 17:47	1°♄36'10	0°09'35
minimum elong	3367 Nov 13 22:25	21°♄38'01	2°07'28	minimum elong	3374 Jan 21 17:47	1°♄36'10	0°09'36
max. Earth dist.	3367 Nov 13 23:18	21°♄38'17	10.69843 AU	behind sun begin	3374 Jan 21 11:59	1°♄34'29	
morning rise	3367 Nov 30 20:34	23°♄41'00		behind sun end	3374 Jan 21 23:36	1°♄37'52	
	3368 Feb 05 19:24	0°♄		max. Earth dist.	3374 Jan 21 14:23	1°♄35'11	11.02714 AU
retrograde	3368 Mar 09 15:58	0°♄55'58		morning rise	3374 Feb 07 09:31	3°♄33'35	
	3368 Apr 12 04:17	30°♄		retrograde	3374 May 19 11:18	10°♄36'22	
opposition	3368 May 17 01:35	27°♄36'55	2°31'10	desc. node	3374 Jun 06 21:00	10°♄19'59	
min. Earth dist.	3368 May 17 00:25	27°♄37'09	8.74894 AU	opposition	3374 Jul 29 00:01	7°♄18'11	0°-4'-27
direct	3368 Jul 26 16:52	24°♄13'05		min. Earth dist.	3374 Jul 29 03:09	7°♄17'36	9.02175 AU
	3368 Oct 24 12:48	0°♄		direct	3374 Oct 07 15:15	3°♄59'27	
evening set	3368 Nov 08 08:03	1°♄42'20		evening set	3375 Jan 16 12:11	11°♄01'37	
conjunction	3368 Nov 25 07:31	3°♄44'33	1°57'08	conjunction	3375 Feb 02 03:55	12°♄59'12	0°-16'-51
minimum elong	3368 Nov 25 07:33	3°♄44'34	1°57'08	minimum elong	3375 Feb 02 03:54	12°♄59'12	0°16'51
max. Earth dist.	3368 Nov 25 08:21	3°♄44'48	10.79470 AU	max. Earth dist.	3375 Feb 01 23:37	12°♄57'56	11.01116 AU
morning rise	3368 Dec 12 03:04	5°♄45'39		morning rise	3375 Feb 18 20:16	14°♄56'57	
retrograde	3369 Mar 21 20:42	12°♄55'05			3375 Feb 19 06:46	15°♄	
opposition	3369 May 29 15:44	9°♄36'51	2°15'08	retrograde	3375 May 31 10:51	22°♄02'55	
min. Earth dist.	3369 May 29 15:29	9°♄36'53	8.83936 AU	opposition	3375 Aug 10 05:13	18°♄43'55	0°-36'-35
direct	3369 Aug 08 11:18	6°♄14'13		min. Earth dist.	3375 Aug 10 08:42	18°♄43'17	8.99543 AU
evening set	3369 Nov 20 12:13	13°♄36'12		direct	3375 Oct 19 13:31	15°♄25'20	
				evening set	3376 Jan 27 23:54	22°♄27'37	
conjunction	3369 Dec 07 09:13	15°♄36'45	1°41'54	conjunction	3376 Feb 13 15:43	24°♄25'37	0°-42'-41
minimum elong	3369 Dec 07 09:15	15°♄36'45	1°41'54	minimum elong	3376 Feb 13 15:42	24°♄25'36	0°42'41
max. Earth dist.	3369 Dec 07 08:56	15°♄36'39	10.87863 AU	max. Earth dist.	3376 Feb 13 11:45	24°♄24'26	10.97471 AU
morning rise	3369 Dec 24 02:56	17°♄36'21		morning rise	3376 Mar 01 08:52	26°♄24'01	
retrograde	3370 Apr 02 19:32	24°♄41'27			3376 Apr 03 20:18	0°♄	
opposition	3370 Jun 11 02:12	21°♄23'45	1°53'41	retrograde	3376 Jun 11 16:10	3°♄34'31	
min. Earth dist.	3370 Jun 11 03:18	21°♄23'33	8.91547 AU	opposition	3376 Aug 21 11:46	0°♄14'30	-1°-7'-31
direct	3370 Aug 21 01:30	18°♄02'12		min. Earth dist.	3376 Aug 21 14:43	0°♄13'57	8.94937 AU
evening set	3370 Dec 02 09:42	25°♄17'46			3376 Aug 24 17:49	30°♄	
conjunction	3370 Dec 19 04:45	27°♄16'58	1°22'39	direct	3376 Oct 30 12:48	26°♄55'50	
minimum elong	3370 Dec 19 04:47	27°♄16'59	1°22'38		3377 Jan 01 00:20	0°♄	
max. Earth dist.	3370 Dec 19 02:47	27°♄16'23	10.94646 AU	evening set	3377 Feb 07 14:17	3°♄59'38	
morning rise	3371 Jan 04 21:21	29°♄15'28					
	3371 Jan 11 07:40	0°♄		conjunction	3377 Feb 24 06:36	5°♄58'24	-1°-7'-00
retrograde	3371 Apr 14 17:15	6°♄17'41		minimum elong	3377 Feb 24 06:34	5°♄58'24	1°07'01
opposition	3371 Jun 23 09:45	3°♄00'15	1°27'55	max. Earth dist.	3377 Feb 24 03:32	5°♄57'29	10.91918 AU
min. Earth dist.	3371 Jun 23 11:25	2°♄59'56	8.97372 AU	morning rise	3377 Mar 13 00:47	7°♄57'48	
	3371 Aug 12 19:44	30°♄		retrograde	3377 Jun 24 01:59	15°♄14'05	
direct	3371 Sep 02 11:32	29°♄39'40		opposition	3377 Sep 02 21:00	11°♄52'54	-1°-36'-4
	3371 Sep 22 22:06	0°♄		min. Earth dist.	3377 Sep 02 23:15	11°♄52'29	8.88530 AU
evening set	3371 Dec 14 01:49	6°♄49'51		direct	3377 Nov 11 11:13	8°♄33'59	
				evening set	3378 Feb 19 08:42	15°♄40'40	
conjunction	3371 Dec 30 19:34	8°♄48'09	1°00'13	conjunction	3378 Mar 08 01:47	17°♄40'32	-1°-28'-50
minimum elong	3371 Dec 30 19:36	8°♄48'09	1°00'13	minimum elong	3378 Mar 08 01:44	17°♄40'31	1°28'52
max. Earth dist.	3371 Dec 30 17:07	8°♄47'25	10.99487 AU	max. Earth dist.	3378 Mar 07 22:38	17°♄39'35	10.84674 AU
morning rise	3372 Jan 16 11:30	10°♄45'54		morning rise	3378 Mar 24 21:32	19°♄41'14	
retrograde	3372 Apr 25 14:20	17°♄46'47		retrograde	3378 Jul 06 16:57	27°♄04'26	
opposition	3372 Jul 04 15:11	14°♄29'21	0°58'54	opposition	3378 Sep 15 09:41	23°♄41'59	-2°-1'-3
min. Earth dist.	3372 Jul 04 16:58	14°♄29'01	9.01132 AU	min. Earth dist.	3378 Sep 15 11:55	23°♄41'34	8.80569 AU
direct	3372 Sep 13 15:40	11°♄09'37		direct	3378 Nov 23 12:53	20°♄22'36	
evening set	3372 Dec 24 14:37	18°♄15'46		evening set	3379 Mar 03 08:40	27°♄33'30	
conjunction	3373 Jan 10 07:29	20°♄13'29	0°35'33	conjunction	3379 Mar 20 03:06	29°♄34'49	-1°-47'-13
minimum elong	3373 Jan 10 07:30	20°♄13'30	0°35'33	minimum elong	3379 Mar 20 03:03	29°♄34'48	1°47'14
max. Earth dist.	3373 Jan 10 04:57	20°♄12'44	11.02186 AU	max. Earth dist.	3379 Mar 19 23:38	29°♄33'46	10.76022 AU
morning rise	3373 Jan 26 23:02	22°♄10'53			3379 Mar 23 14:04	0°♄	
retrograde	3373 May 07 12:06	29°♄11'59		morning rise	3379 Apr 06 01:03	1°♄37'11	
opposition	3373 Jul 16 19:30	25°♄54'18	0°27'44	retrograde	3379 Jul 19 13:58	9°♄08'07	
min. Earth dist.	3373 Jul 16 21:42	25°♄53'54	9.02726 AU	opposition	3379 Sep 28 02:16	5°♄44'22	-2°-21'-17
direct	3373 Sep 25 16:54	22°♄35'12					



min. Earth dist.	3379 Sep 28 04:41	5°Υ43'55	8.71360 AU	retrograde	3385 Oct 08 11:06	27°Π24'19	
direct	3379 Dec 05 17:46	2°Υ24'19		opposition	3385 Dec 15 12:16	23°Π55'09	-1°-49'-32
evening set	3380 Mar 14 15:14	9°Υ40'39		min. Earth dist.	3385 Dec 15 10:49	23°Π55'27	8.14492 AU
				direct	3386 Feb 20 03:00	20°Π29'05	
conjunction	3380 Mar 31 11:49	11°Υ43'45	-2°-1'-9	evening set	3386 Jun 02 19:15	28°Π28'19	
minimum elong	3380 Mar 31 11:48	11°Υ43'45	2°01'10		3386 Jun 14 18:00	0°Ϸ	
max. Earth dist.	3380 Mar 31 08:59	11°Υ42'53	10.66297 AU				
morning rise	3380 Apr 17 12:25	13°Υ48'06		conjunction	3386 Jun 20 16:41	0°Ϸ46'06	-1°-15'-36
retrograde	3380 Jul 31 16:52	21°Υ27'20		minimum elong	3386 Jun 20 16:44	0°Ϸ46'07	1°15'37
opposition	3380 Oct 09 23:30	18°Υ02'17	-2°-35'-34	max. Earth dist.	3386 Jun 20 19:10	0°Ϸ46'54	10.11681 AU
min. Earth dist.	3380 Oct 10 01:24	18°Υ01'55	8.61265 AU	morning rise	3386 Jul 08 17:07	3°Ϸ04'50	
direct	3380 Dec 17 04:14	14°Υ41'26		retrograde	3386 Oct 22 22:20	11°Ϸ20'05	
evening set	3381 Mar 27 05:26	22°Υ04'10		opposition	3386 Dec 29 12:27	7°Ϸ50'56	-1°-17'00
				min. Earth dist.	3386 Dec 29 10:06	7°Ϸ51'25	8.09536 AU
conjunction	3381 Apr 13 04:57	24°Υ09'25	-2°-9'-45	direct	3387 Mar 06 02:39	4°Ϸ23'55	
minimum elong	3381 Apr 13 04:56	24°Υ09'25	2°09'46	evening set	3387 Jun 17 12:53	12°Ϸ28'40	
max. Earth dist.	3381 Apr 13 03:32	24°Υ08'59	10.55895 AU				
morning rise	3381 Apr 30 08:39	26°Υ16'01		conjunction	3387 Jul 05 13:54	14°Ϸ48'03	0°-47'-13
	3381 Jun 02 10:42	0°Ϸ		minimum elong	3387 Jul 05 13:56	14°Ϸ48'03	0°47'14
retrograde	3381 Aug 14 03:24	4°Ϸ03'44		max. Earth dist.	3387 Jul 05 17:39	14°Ϸ49'16	10.07935 AU
opposition	3381 Oct 23 01:46	0°Ϸ37'26	-2°-42'-48	morning rise	3387 Jul 23 16:46	17°Ϸ08'02	
min. Earth dist.	3381 Oct 23 02:27	0°Ϸ37'18	8.50718 AU	retrograde	3387 Nov 06 09:41	25°Ϸ23'05	
	3381 Oct 31 02:32	30°ϣΥ		opposition	3388 Jan 12 14:16	21°Ϸ54'16	0°-39'-33
direct	3381 Dec 29 20:31	27°Υ15'40		min. Earth dist.	3388 Jan 12 10:58	21°Ϸ54'57	8.07013 AU
	3382 Feb 24 15:11	0°Ϸ		direct	3388 Mar 19 07:18	18°Ϸ26'26	
evening set	3382 Apr 09 04:23	4°Ϸ45'31		evening set	3388 Jul 01 11:09	26°Ϸ35'11	
conjunction	3382 Apr 26 07:31	6°Ϸ53'14	-2°-12'-15	conjunction	3388 Jul 19 14:23	28°Ϸ55'22	0°-15'-52
minimum elong	3382 Apr 26 07:32	6°Ϸ53'14	2°12'15	minimum elong	3388 Jul 19 14:24	28°Ϸ55'23	0°15'54
max. Earth dist.	3382 Apr 26 07:06	6°Ϸ53'06	10.45301 AU	max. Earth dist.	3388 Jul 19 19:00	28°Ϸ56'52	10.06715 AU
morning rise	3382 May 13 15:01	9°Ϸ02'20			3388 Jul 27 21:45	0°Ϣ	
	3382 Jul 09 21:30	15°Ϸ		morning rise	3388 Aug 06 18:10	1°Ϣ15'47	
retrograde	3382 Aug 27 22:37	16°Ϸ58'10		retrograde	3388 Nov 19 19:16	9°Ϣ28'27	
	3382 Oct 16 22:06	15°ϣϷ		asc. node	3389 Jan 22 01:33	6°Ϣ18'07	
opposition	3382 Nov 05 09:12	13°Ϸ30'46	-2°-42'-8	opposition	3389 Jan 25 16:37	6°Ϣ00'12	0°00'23
min. Earth dist.	3382 Nov 05 08:56	13°Ϸ30'49	8.40226 AU	min. Earth dist.	3389 Jan 25 12:52	6°Ϣ00'58	8.07077 AU
direct	3383 Jan 11 16:39	10°Ϸ07'59		direct	3389 Apr 02 15:05	2°Ϣ31'44	
	3383 Mar 30 04:27	15°Ϸ		evening set	3389 Jul 16 11:24	10°Ϣ42'40	
evening set	3383 Apr 22 12:32	17°Ϸ45'26					
				conjunction	3389 Aug 03 15:12	13°Ϣ02'47	0°16'28
conjunction	3383 May 09 19:55	19°Ϸ55'45	-2°-8'-5	minimum elong	3389 Aug 03 15:11	13°Ϣ02'47	0°16'28
minimum elong	3383 May 09 19:56	19°Ϸ55'46	2°08'06	max. Earth dist.	3389 Aug 03 19:47	13°Ϣ04'15	10.08065 AU
max. Earth dist.	3383 May 09 19:49	19°Ϸ55'44	10.35041 AU		3389 Aug 18 18:51	15°Ϣ	
morning rise	3383 May 27 07:47	22°Ϸ07'31		morning rise	3389 Aug 21 18:18	15°Ϣ22'43	
	3383 Aug 27 15:57	0°Π		retrograde	3389 Dec 04 01:14	23°Ϣ31'02	
retrograde	3383 Sep 10 22:35	0°Π10'37		opposition	3390 Feb 08 17:59	20°Ϣ03'35	0°40'11
	3383 Sep 25 03:53	30°ϣϷ		min. Earth dist.	3390 Feb 08 14:40	20°Ϣ04'16	8.09660 AU
opposition	3383 Nov 18 21:47	26°Ϸ42'21	-2°-32'-59	direct	3390 Apr 17 00:12	16°Ϣ34'42	
min. Earth dist.	3383 Nov 18 21:06	26°Ϸ42'30	8.30322 AU	evening set	3390 Jul 31 11:07	24°Ϣ45'56	
direct	3384 Jan 24 20:50	23°Ϸ18'27					
	3384 Apr 26 15:20	0°Π		conjunction	3390 Aug 18 13:44	27°Ϣ05'08	0°47'36
evening set	3384 May 05 06:02	1°Π03'39		minimum elong	3390 Aug 18 13:42	27°Ϣ05'08	0°47'36
				max. Earth dist.	3390 Aug 18 17:20	27°Ϣ06'18	10.11799 AU
conjunction	3384 May 22 18:03	3°Π16'38	-1°-57'-1	morning rise	3390 Sep 05 14:35	29°Ϣ23'46	
minimum elong	3384 May 22 18:06	3°Π16'39	1°57'02		3390 Sep 10 10:09	0°ϣ	
max. Earth dist.	3384 May 22 18:16	3°Π16'42	10.25662 AU	retrograde	3390 Dec 18 02:26	7°ϣ26'13	
morning rise	3384 Jun 09 10:29	5°Π31'01		opposition	3391 Feb 22 17:01	3°ϣ59'48	1°17'13
retrograde	3384 Sep 24 02:58	13°Π40'03		min. Earth dist.	3391 Feb 22 14:38	4°ϣ00'17	8.14481 AU
opposition	3384 Dec 01 15:03	10°Π11'12	-2°-15'-17	direct	3391 May 01 09:09	0°ϣ30'46	
min. Earth dist.	3384 Dec 01 14:12	10°Π11'22	8.21566 AU	evening set	3391 Aug 15 07:22	8°ϣ40'34	
direct	3385 Feb 06 08:47	6°Π46'11					
evening set	3385 May 19 08:33	14°Π38'46		conjunction	3391 Sep 02 07:23	10°ϣ58'08	1°15'40
				minimum elong	3391 Sep 02 07:20	10°ϣ58'07	1°15'40
conjunction	3385 Jun 06 01:25	16°Π54'20	-1°-39'-17	max. Earth dist.	3391 Sep 02 09:40	10°ϣ58'52	10.17579 AU
minimum elong	3385 Jun 06 01:28	16°Π54'21	1°39'18	morning rise	3391 Sep 20 04:42	13°ϣ14'50	
max. Earth dist.	3385 Jun 06 02:37	16°Π54'43	10.17714 AU	retrograde	3391 Dec 31 21:27	21°ϣ10'29	
morning rise	3385 Jun 23 22:12	19°Π11'07		opposition	3392 Mar 07 13:04	17°ϣ45'15	1°49'16



min. Earth dist.	3392 Mar 07 11:24	17° $\overline{14}$ 45'35	8.21193 AU	opposition	3398 May 24 14:26	4° $\overline{27}$ 41'38	2°22'49
direct	3392 May 14 17:10	14° $\overline{14}$ 16'25		min. Earth dist.	3398 May 24 14:52	4° $\overline{27}$ 41'33	8.78689 AU
evening set	3392 Aug 28 21:40	22° $\overline{14}$ 23'04		direct	3398 Aug 03 08:36	1° $\overline{27}$ 18'00	
				evening set	3398 Nov 15 15:53	8° $\overline{27}$ 43'37	
conjunction	3392 Sep 15 18:05	24° $\overline{14}$ 38'29	1°39'04	conjunction	3398 Dec 02 13:58	10° $\overline{27}$ 45'01	1°49'02
minimum elong	3392 Sep 15 18:02	24° $\overline{14}$ 38'28	1°39'03	minimum elong	3398 Dec 02 14:00	10° $\overline{27}$ 45'02	1°49'02
max. Earth dist.	3392 Sep 15 19:28	24° $\overline{14}$ 38'56	10.25086 AU	max. Earth dist.	3398 Dec 02 13:05	10° $\overline{27}$ 44'45	10.82814 AU
morning rise	3392 Oct 03 11:04	26° $\overline{14}$ 52'48		morning rise	3398 Dec 19 08:38	12° $\overline{27}$ 45'25	
	3392 Oct 29 20:10	0° $\overline{14}$		retrograde	3399 Mar 28 23:56	19° $\overline{27}$ 52'44	
retrograde	3393 Jan 13 09:17	4° $\overline{14}$ 41'03		retrograde	3399 Jun 06 02:36	16° $\overline{27}$ 34'18	2°03'36
opposition	3393 Mar 21 05:11	1° $\overline{14}$ 17'02	2°14'37	opposition	3399 Jun 06 02:43	16° $\overline{27}$ 34'17	8.86789 AU
min. Earth dist.	3393 Mar 21 03:31	1° $\overline{14}$ 17'22	8.29471 AU	min. Earth dist.	3399 Aug 16 02:17	13° $\overline{27}$ 11'46	
	3393 Apr 06 13:58	30° $\overline{R}$		direct	3399 Nov 27 16:08	20° $\overline{27}$ 30'32	
direct	3393 May 28 22:05	27° $\overline{14}$ 48'42		evening set			
	3393 Jul 19 05:03	0° $\overline{14}$					
evening set	3393 Sep 12 04:30	5° $\overline{14}$ 50'36		conjunction	3399 Dec 14 12:14	22° $\overline{27}$ 30'27	1°31'25
				minimum elong	3399 Dec 14 12:17	22° $\overline{27}$ 30'28	1°31'25
conjunction	3393 Sep 29 20:47	8° $\overline{14}$ 03'32	1°56'38	max. Earth dist.	3399 Dec 14 11:47	22° $\overline{27}$ 30'19	10.90240 AU
minimum elong	3393 Sep 29 20:44	8° $\overline{14}$ 03'31	1°56'37	morning rise	3399 Dec 31 05:18	24° $\overline{27}$ 29'33	
max. Earth dist.	3393 Sep 29 22:00	8° $\overline{14}$ 03'55	10.33980 AU		3400 Feb 25 11:48	0° $\overline{27}$	
morning rise	3393 Oct 17 08:58	10° $\overline{14}$ 15'12		retrograde	3400 Apr 09 23:51	1° $\overline{27}$ 33'19	
retrograde	3394 Jan 26 14:55	17° $\overline{14}$ 55'39			3400 May 24 20:19	30° $\overline{R}$	
opposition	3394 Apr 03 16:44	14° $\overline{14}$ 32'51	2°32'11	opposition	3400 Jun 18 11:18	28° $\overline{27}$ 15'15	1°39'33
min. Earth dist.	3394 Apr 03 14:59	14° $\overline{14}$ 33'12	8.38921 AU	min. Earth dist.	3400 Jun 18 11:49	28° $\overline{27}$ 15'09	8.93420 AU
direct	3394 Jun 11 21:53	11° $\overline{14}$ 05'13		direct	3400 Aug 28 13:06	24° $\overline{27}$ 53'44	
evening set	3394 Sep 26 02:18	19° $\overline{14}$ 00'59			3400 Nov 20 15:19	0° $\overline{27}$	
				evening set	3400 Dec 09 10:32	2° $\overline{27}$ 06'34	
conjunction	3394 Oct 13 14:15	21° $\overline{14}$ 11'18	2°07'44				
minimum elong	3394 Oct 13 14:14	21° $\overline{14}$ 11'18	2°07'43	conjunction	3400 Dec 26 05:01	4° $\overline{27}$ 05'23	1°10'15
max. Earth dist.	3394 Oct 13 15:39	21° $\overline{14}$ 11'44	10.43824 AU	minimum elong	3400 Dec 26 05:03	4° $\overline{27}$ 05'24	1°10'15
morning rise	3394 Oct 30 21:40	23° $\overline{14}$ 20'15		max. Earth dist.	3400 Dec 26 03:53	4° $\overline{27}$ 05'03	10.96061 AU
	3395 Jan 08 05:06	0° $\overline{14}$		morning rise	3401 Jan 11 21:11	6° $\overline{27}$ 03'34	
retrograde	3395 Feb 08 15:24	0° $\overline{14}$ 52'52		retrograde	3401 Apr 21 20:29	13° $\overline{27}$ 05'09	
	3395 Mar 12 11:24	30° $\overline{R}$		opposition	3401 Jun 30 17:34	9° $\overline{27}$ 47'15	1°11'48
opposition	3395 Apr 16 23:36	27° $\overline{14}$ 31'14	2°41'30	min. Earth dist.	3401 Jun 30 19:01	9° $\overline{27}$ 46'59	8.98329 AU
min. Earth dist.	3395 Apr 16 22:10	27° $\overline{14}$ 31'31	8.49069 AU	direct	3401 Sep 09 17:49	6° $\overline{27}$ 26'41	
direct	3395 Jun 25 14:58	24° $\overline{14}$ 04'29		evening set	3401 Dec 21 00:36	13° $\overline{27}$ 34'45	
	3395 Sep 23 14:19	0° $\overline{14}$					
evening set	3395 Oct 09 14:03	1° $\overline{14}$ 53'04		conjunction	3402 Jan 06 17:46	15° $\overline{27}$ 32'46	0°46'27
				minimum elong	3402 Jan 06 17:48	15° $\overline{27}$ 32'47	0°46'27
conjunction	3395 Oct 26 21:49	4° $\overline{14}$ 00'49	2°12'10	max. Earth dist.	3402 Jan 06 15:35	15° $\overline{27}$ 32'07	11.00058 AU
minimum elong	3395 Oct 26 21:49	4° $\overline{14}$ 00'49	2°12'10	morning rise	3402 Jan 23 09:36	17° $\overline{27}$ 30'24	
max. Earth dist.	3395 Oct 26 23:05	4° $\overline{14}$ 01'13	10.54120 AU	retrograde	3402 May 03 16:11	24° $\overline{27}$ 31'20	
morning rise	3395 Nov 13 00:56	6° $\overline{14}$ 07'12		opposition	3402 Jul 12 22:13	21° $\overline{27}$ 13'22	0°41'26
retrograde	3396 Feb 21 07:29	13° $\overline{14}$ 32'17		min. Earth dist.	3402 Jul 13 00:02	21° $\overline{27}$ 13'02	9.01337 AU
opposition	3396 Apr 29 01:28	10° $\overline{14}$ 11'42	2°42'40	direct	3402 Sep 21 21:38	17° $\overline{27}$ 53'36	
min. Earth dist.	3396 Apr 29 00:58	10° $\overline{14}$ 11'48	8.59405 AU	evening set	3403 Jan 01 11:52	24° $\overline{27}$ 58'11	
direct	3396 Jul 08 03:18	6° $\overline{14}$ 45'56					
evening set	3396 Oct 21 15:57	14° $\overline{14}$ 26'51		conjunction	3403 Jan 18 04:16	26° $\overline{27}$ 55'46	0°20'57
	3396 Oct 26 05:55	15° $\overline{14}$		minimum elong	3403 Jan 18 04:17	26° $\overline{27}$ 55'46	0°20'58
				max. Earth dist.	3403 Jan 18 02:02	26° $\overline{27}$ 55'06	11.02086 AU
conjunction	3396 Nov 07 19:53	16° $\overline{14}$ 32'11	2°10'10	morning rise	3403 Feb 03 20:02	28° $\overline{27}$ 53'10	
minimum elong	3396 Nov 07 19:53	16° $\overline{14}$ 32'12	2°10'11		3403 Feb 13 14:49	0° $\overline{27}$	
max. Earth dist.	3396 Nov 07 20:08	16° $\overline{14}$ 32'16	10.64362 AU	retrograde	3403 May 15 14:22	5° $\overline{27}$ 54'56	
morning rise	3396 Nov 24 19:30	18° $\overline{14}$ 36'15		opposition	3403 Jul 25 02:07	2° $\overline{27}$ 36'41	0°09'35
retrograde	3397 Mar 04 17:27	25° $\overline{14}$ 54'25		min. Earth dist.	3403 Jul 25 03:22	2° $\overline{27}$ 36'27	9.02334 AU
opposition	3397 May 11 22:12	22° $\overline{14}$ 34'45	2°36'10		3403 Sep 03 20:05	30° $\overline{R}$	
min. Earth dist.	3397 May 11 22:34	22° $\overline{14}$ 34'40	8.69432 AU	direct	3403 Oct 03 21:29	29° $\overline{27}$ 17'34	
direct	3397 Jul 21 09:31	19° $\overline{14}$ 10'01			3403 Nov 02 09:48	0° $\overline{27}$	
evening set	3397 Nov 03 08:19	26° $\overline{14}$ 43'10		desc. node	3403 Nov 14 01:19	0° $\overline{27}$ 38'54	
				evening set	3404 Jan 12 21:56	6° $\overline{27}$ 19'59	
conjunction	3397 Nov 20 08:59	28° $\overline{14}$ 46'22	2°02'13				
minimum elong	3397 Nov 20 09:00	28° $\overline{14}$ 46'22	2°02'14	conjunction	3404 Jan 29 13:58	8° $\overline{27}$ 17'28	0°-5'-25
max. Earth dist.	3397 Nov 20 08:06	28° $\overline{14}$ 46'06	10.74070 AU	minimum elong	3404 Jan 29 13:58	8° $\overline{27}$ 17'28	0°05'25
	3397 Nov 30 12:07	0° $\overline{27}$		behind sun begin	3404 Jan 29 07:14	8° $\overline{27}$ 15'30	
morning rise	3397 Dec 07 05:50	0° $\overline{27}$ 48'25		behind sun end	3404 Jan 29 20:42	8° $\overline{27}$ 19'26	
retrograde	3398 Mar 16 22:55	8° $\overline{27}$ 00'35		max. Earth dist.	3404 Jan 29 12:27	8° $\overline{27}$ 17'03	11.02061 AU



morning rise	3404 Feb 15 05:57	10° $\approx$ 15'00		morning rise	3410 Apr 25 22:28	20° $\Upsilon$ 54'13	
	3404 Apr 02 01:49	15° $\approx$		retrograde	3410 Aug 09 11:15	28° $\Upsilon$ 36'26	
retrograde	3404 May 26 13:54	17° $\approx$ 19'04		opposition	3410 Oct 18 13:08	25° $\Upsilon$ 11'27	-2°-40'-8
	3404 Jul 22 14:26	15° $\approx$		min. Earth dist.	3410 Oct 18 14:26	25° $\Upsilon$ 11'11	8.58873 AU
opposition	3404 Aug 05 06:18	14° $\approx$ 00'19	0°-22'-39	direct	3410 Dec 25 11:53	21° $\Upsilon$ 50'51	
min. Earth dist.	3404 Aug 05 07:22	14° $\approx$ 00'07	9.01275 AU	evening set	3411 Apr 04 16:42	29° $\Upsilon$ 15'47	
direct	3404 Oct 14 18:26	10° $\approx$ 41'40			3411 Apr 10 17:20	0° $\delta$	
	3404 Dec 29 14:31	15° $\approx$					
evening set	3405 Jan 23 08:37	17° $\approx$ 43'22		conjunction	3411 Apr 21 17:44	1° $\delta$ 21'51	-2°-11'-44
				minimum elong	3411 Apr 21 17:44	1° $\delta$ 21'51	2°11'44
conjunction	3405 Feb 09 00:23	19° $\approx$ 41'03	0°-31'-30	max. Earth dist.	3411 Apr 21 15:32	1° $\delta$ 21'10	10.53444 AU
minimum elong	3405 Feb 09 00:22	19° $\approx$ 41'03	0°31'31	morning rise	3411 May 08 23:20	3° $\delta$ 29'20	
max. Earth dist.	3405 Feb 08 22:27	19° $\approx$ 40'29	10.99979 AU	retrograde	3411 Aug 23 00:39	11° $\delta$ 19'46	
morning rise	3405 Feb 25 16:58	21° $\approx$ 39'01		opposition	3411 Oct 31 17:05	7° $\delta$ 53'37	-2°-43'-6
retrograde	3405 Jun 07 17:17	28° $\approx$ 46'48		min. Earth dist.	3411 Oct 31 18:34	7° $\delta$ 53'19	8.48214 AU
opposition	3405 Aug 17 11:43	25° $\approx$ 27'23	0°-54'-9	direct	3412 Jan 07 05:37	4° $\delta$ 31'58	
min. Earth dist.	3405 Aug 17 13:17	25° $\approx$ 27'06	8.98204 AU	evening set	3412 Apr 16 19:29	12° $\delta$ 04'20	
direct	3405 Oct 26 15:48	22° $\approx$ 08'58					
evening set	3406 Feb 03 21:17	29° $\approx$ 11'23		conjunction	3412 May 04 00:36	14° $\delta$ 12'58	-2°-10'-38
	3406 Feb 10 18:54	0° $\kappa$		minimum elong	3412 May 04 00:37	14° $\delta$ 12'58	2°10'39
				max. Earth dist.	3412 May 03 23:10	14° $\delta$ 12'31	10.42773 AU
conjunction	3406 Feb 20 13:07	1° $\kappa$ 09'35	0°-56'-32		3412 May 10 06:38	15° $\delta$	
minimum elong	3406 Feb 20 13:05	1° $\kappa$ 09'35	0°56'34	morning rise	3412 May 21 10:14	16° $\delta$ 23'02	
max. Earth dist.	3406 Feb 20 10:25	1° $\kappa$ 08'47	10.95934 AU	retrograde	3412 Sep 04 19:53	24° $\delta$ 21'14	
morning rise	3406 Mar 09 06:46	3° $\kappa$ 08'20		opposition	3412 Nov 13 02:16	20° $\delta$ 54'01	-2°-37'-54
retrograde	3406 Jun 19 23:02	10° $\kappa$ 21'10		min. Earth dist.	3412 Nov 13 03:05	20° $\delta$ 53'51	8.37687 AU
opposition	3406 Aug 29 19:22	7° $\kappa$ 00'52	-1°-23'-47	direct	3413 Jan 19 06:48	17° $\delta$ 31'13	
min. Earth dist.	3406 Aug 29 21:22	7° $\kappa$ 00'30	8.93249 AU	evening set	3413 Apr 30 07:22	25° $\delta$ 11'17	
direct	3406 Nov 07 13:32	3° $\kappa$ 42'27					
evening set	3407 Feb 15 13:12	10° $\kappa$ 46'57		conjunction	3413 May 17 17:07	27° $\delta$ 22'38	-2°-2'-47
				minimum elong	3413 May 17 17:09	27° $\delta$ 22'39	2°02'48
conjunction	3407 Mar 04 05:42	12° $\kappa$ 46'02	-1°-19'-31	max. Earth dist.	3413 May 17 16:59	27° $\delta$ 22'35	10.32560 AU
minimum elong	3407 Mar 04 05:39	12° $\kappa$ 46'02	1°19'32	morning rise	3413 Jun 04 07:07	29° $\delta$ 35'22	
max. Earth dist.	3407 Mar 04 03:29	12° $\kappa$ 45'23	10.90075 AU		3413 Jun 07 14:56	0° $\Pi$	
morning rise	3407 Mar 21 00:42	14° $\kappa$ 45'53		retrograde	3413 Sep 18 21:26	7° $\Pi$ 40'20	
retrograde	3407 Jul 02 10:10	22° $\kappa$ 04'57		opposition	3413 Nov 26 16:23	4° $\Pi$ 12'11	-2°-24'-12
opposition	3407 Sep 11 05:48	18° $\kappa$ 43'35	-1°-50'-22	min. Earth dist.	3413 Nov 26 16:03	4° $\Pi$ 12'15	8.27918 AU
min. Earth dist.	3407 Sep 11 07:16	18° $\kappa$ 43'18	8.86581 AU	direct	3414 Feb 01 14:02	0° $\Pi$ 48'08	
direct	3407 Nov 19 14:43	15° $\kappa$ 24'58		evening set	3414 May 14 04:41	8° $\Pi$ 35'51	
evening set	3408 Feb 27 09:59	22° $\kappa$ 32'52					
				conjunction	3414 May 31 19:15	10° $\Pi$ 49'53	-1°-48'-9
conjunction	3408 Mar 15 03:42	24° $\kappa$ 33'12	-1°-39'-27	minimum elong	3414 May 31 19:19	10° $\Pi$ 49'54	1°48'10
minimum elong	3408 Mar 15 03:40	24° $\kappa$ 33'11	1°39'28	max. Earth dist.	3414 May 31 19:48	10° $\Pi$ 50'03	10.23415 AU
max. Earth dist.	3408 Mar 15 02:20	24° $\kappa$ 32'47	10.82603 AU	morning rise	3414 Jun 18 13:44	13° $\Pi$ 05'12	
morning rise	3408 Apr 01 00:22	26° $\kappa$ 34'27		retrograde	3414 Oct 03 04:08	21° $\Pi$ 15'18	
	3408 May 02 01:55	0° $\Upsilon$		opposition	3414 Dec 10 10:40	17° $\Pi$ 46'31	-2°-2'-14
retrograde	3408 Jul 14 05:13	4° $\Upsilon$ 00'39		min. Earth dist.	3414 Dec 10 09:46	17° $\Pi$ 46'42	8.19490 AU
opposition	3408 Sep 22 19:40	0° $\Upsilon$ 38'08	-2°-12'-43	direct	3415 Feb 15 02:48	14° $\Pi$ 21'11	
min. Earth dist.	3408 Sep 22 20:29	0° $\Upsilon$ 37'59	8.78429 AU	evening set	3415 May 28 10:40	22° $\Pi$ 16'04	
	3408 Oct 01 06:21	30° $\approx$					
direct	3408 Nov 30 17:18	27° $\kappa$ 19'06		conjunction	3415 Jun 15 05:53	24° $\Pi$ 32'33	-1°-27'-13
	3409 Jan 26 22:47	0° $\Upsilon$		minimum elong	3415 Jun 15 05:57	24° $\Pi$ 32'34	1°27'14
evening set	3409 Mar 10 12:52	4° $\Upsilon$ 31'38		max. Earth dist.	3415 Jun 15 06:40	24° $\Pi$ 32'48	10.15884 AU
				morning rise	3415 Jul 03 04:28	26° $\Pi$ 50'07	
conjunction	3409 Mar 27 08:17	6° $\Upsilon$ 33'30	-1°-55'-24		3415 Jul 29 14:33	0° $\Theta$	
minimum elong	3409 Mar 27 08:14	6° $\Upsilon$ 33'30	1°55'25	retrograde	3415 Oct 17 14:09	5° $\Theta$ 03'27	
max. Earth dist.	3409 Mar 27 07:00	6° $\Upsilon$ 33'07	10.73789 AU	opposition	3415 Dec 24 08:34	1° $\Theta$ 34'21	-1°-32'-50
morning rise	3409 Apr 13 07:14	8° $\Upsilon$ 36'31		min. Earth dist.	3415 Dec 24 07:30	1° $\Theta$ 34'34	8.12909 AU
retrograde	3409 Jul 27 04:59	16° $\Upsilon$ 10'32			3416 Jan 13 08:17	30° $\approx$	
opposition	3409 Oct 05 14:01	12° $\Upsilon$ 46'47	-2°-29'-41	direct	3416 Feb 28 22:34	28° $\Pi$ 07'46	
min. Earth dist.	3409 Oct 05 14:42	12° $\Upsilon$ 46'40	8.69085 AU		3416 Apr 14 16:35	0° $\Theta$	
direct	3409 Dec 12 23:33	9° $\Upsilon$ 27'05		evening set	3416 Jun 11 00:00	6° $\Theta$ 08'57	
evening set	3410 Mar 22 22:42	16° $\Upsilon$ 45'19					
				conjunction	3416 Jun 28 23:12	8° $\Theta$ 27'24	-1°00'-58
conjunction	3410 Apr 08 20:28	18° $\Upsilon$ 49'07	-2°-6'-26	minimum elong	3416 Jun 28 23:15	8° $\Theta$ 27'24	1°00'59
minimum elong	3410 Apr 08 20:27	18° $\Upsilon$ 49'07	2°06'26	max. Earth dist.	3416 Jun 29 00:16	8° $\Theta$ 27'44	10.10414 AU
max. Earth dist.	3410 Apr 08 18:25	18° $\Upsilon$ 48'29	10.63950 AU	morning rise	3416 Jul 17 00:58	10° $\Theta$ 46'39	



retrograde	3416 Oct 30 23:59	19° $\overline{50}$ 1'07		3422 Sep 09 02:50	0° $\underline{5}$	
opposition	3417 Jan 06 08:54	15° $\overline{53}$ 2'00	0°-57'-36			
min. Earth dist.	3417 Jan 06 07:43	15° $\overline{53}$ 2'14	8.08579 AU	conjunction	3422 Sep 24 13:40	1° $\underline{5}$ 56'58 1°48'59
direct	3417 Mar 14 01:08	12° $\overline{50}$ 4'19		minimum elong	3422 Sep 24 13:37	1° $\underline{5}$ 56'57 1°48'58
evening set	3417 Jun 25 19:09	20° $\overline{51}$ 0'32		max. Earth dist.	3422 Sep 24 16:13	1° $\underline{5}$ 57'46 10.28518 AU
				morning rise	3422 Oct 12 04:08	4° $\underline{5}$ 10'01
conjunction	3417 Jul 13 21:18	22° $\overline{53}$ 0'16	0°-30'-54	retrograde	3423 Jan 21 17:56	11° $\underline{5}$ 54'24
minimum elong	3417 Jul 13 21:19	22° $\overline{53}$ 0'16	0°30'55	opposition	3423 Mar 29 16:31	8° $\underline{5}$ 30'34 2°24'47
max. Earth dist.	3417 Jul 13 22:43	22° $\overline{53}$ 0'43	10.07340 AU	min. Earth dist.	3423 Mar 29 14:52	8° $\underline{5}$ 30'54 8.33337 AU
morning rise	3417 Aug 01 00:56	24° $\overline{55}$ 0'27		direct	3423 Jun 06 15:06	5° $\underline{5}$ 02'08
	3417 Sep 15 10:07	0° $\overline{0}$		evening set	3423 Sep 20 21:19	13° $\underline{5}$ 01'07
retrograde	3417 Nov 14 08:30	3° $\overline{00}$ 3'53				
	3418 Jan 15 08:57	30° $\overline{R}$ $\overline{5}$		conjunction	3423 Oct 08 11:18	15° $\underline{5}$ 12'46 2°03'12
opposition	3418 Jan 20 10:16	29° $\overline{53}$ 5'03	0°-18'-39	minimum elong	3423 Oct 08 11:16	15° $\underline{5}$ 12'45 2°03'12
min. Earth dist.	3418 Jan 20 08:51	29° $\overline{53}$ 5'21	8.06765 AU	max. Earth dist.	3423 Oct 08 12:53	15° $\underline{5}$ 13'16 10.38214 AU
direct	3418 Mar 28 07:17	26° $\overline{50}$ 6'29		morning rise	3423 Oct 25 21:06	17° $\underline{5}$ 23'06
	3418 Jun 04 07:22	0° $\overline{0}$		retrograde	3424 Feb 03 20:20	24° $\underline{5}$ 59'33
evening set	3418 Jul 10 17:54	4° $\overline{01}$ 6'08		opposition	3424 Apr 11 01:32	21° $\underline{5}$ 37'03 2°38'02
asc. node	3418 Jul 15 16:27	4° $\overline{01}$ 5'55		min. Earth dist.	3424 Apr 11 00:02	21° $\underline{5}$ 37'21 8.43496 AU
				direct	3424 Jun 19 11:34	18° $\underline{5}$ 09'34
conjunction	3418 Jul 28 21:31	6° $\overline{02}$ 36'20	0°01'10	evening set	3424 Oct 03 13:42	26° $\underline{5}$ 01'48
minimum elong	3418 Jul 28 21:32	6° $\overline{02}$ 36'21	0°01'09			
behind sun begin	3418 Jul 28 14:11	6° $\overline{02}$ 33'59		conjunction	3424 Oct 20 23:24	28° $\underline{5}$ 10'49 2°10'48
behind sun end	3418 Jul 29 04:54	6° $\overline{02}$ 38'42		minimum elong	3424 Oct 20 23:23	28° $\underline{5}$ 10'49 2°10'48
max. Earth dist.	3418 Jul 28 23:34	6° $\overline{02}$ 36'56	10.06837 AU	max. Earth dist.	3424 Oct 21 00:33	28° $\underline{5}$ 11'11 10.48657 AU
morning rise	3418 Aug 16 01:21	8° $\overline{02}$ 56'35			3424 Nov 04 16:12	0° $\overline{M}$
	3418 Oct 10 16:26	15° $\overline{0}$		morning rise	3424 Nov 07 04:47	0° $\overline{M}$ 18'30
retrograde	3418 Nov 28 15:16	17° $\overline{02}$ 06'57		retrograde	3425 Feb 15 14:53	7° $\overline{M}$ 47'13
	3419 Jan 17 14:09	15° $\overline{R}$ $\overline{0}$		opposition	3425 Apr 24 05:33	4° $\overline{M}$ 25'59 2°43'01
opposition	3419 Feb 03 11:34	13° $\overline{02}$ 38'43	0°21'27	min. Earth dist.	3425 Apr 24 03:54	4° $\overline{M}$ 26'18 8.54111 AU
min. Earth dist.	3419 Feb 03 09:27	13° $\overline{02}$ 39'09	8.07559 AU	direct	3425 Jul 03 03:38	0° $\overline{M}$ 59'37
direct	3419 Apr 11 15:21	10° $\overline{02}$ 09'32		evening set	3425 Oct 16 20:21	8° $\overline{M}$ 44'24
	3419 Jun 27 19:39	15° $\overline{0}$				
evening set	3419 Jul 25 17:33	18° $\overline{02}$ 20'45		conjunction	3425 Nov 03 02:08	10° $\overline{M}$ 50'54 2°11'49
				minimum elong	3425 Nov 03 02:08	10° $\overline{M}$ 50'54 2°11'49
conjunction	3419 Aug 12 20:58	20° $\overline{02}$ 40'33	0°33'02	max. Earth dist.	3425 Nov 03 03:21	10° $\overline{M}$ 51'16 10.59299 AU
minimum elong	3419 Aug 12 20:56	20° $\overline{02}$ 40'33	0°33'02	morning rise	3425 Nov 20 03:30	12° $\overline{M}$ 56'05
max. Earth dist.	3419 Aug 12 23:45	20° $\overline{02}$ 41'27	10.08910 AU		3425 Dec 07 20:02	15° $\overline{M}$
morning rise	3419 Aug 30 23:11	22° $\overline{02}$ 59'58		retrograde	3426 Feb 28 05:05	20° $\overline{M}$ 17'36
	3419 Nov 08 04:11	0° $\overline{M}$		opposition	3426 May 07 04:40	16° $\overline{M}$ 57'31 2°40'04
retrograde	3419 Dec 12 19:01	1° $\overline{M}$ 05'33		min. Earth dist.	3426 May 07 03:05	16° $\overline{M}$ 57'49 8.64652 AU
	3420 Jan 16 16:55	30° $\overline{R}$ $\overline{0}$			3426 Jun 03 06:15	15° $\overline{R}$ $\overline{M}$
opposition	3420 Feb 17 11:29	27° $\overline{02}$ 38'07	1°00'03	direct	3426 Jul 16 12:11	13° $\overline{M}$ 32'24
min. Earth dist.	3420 Feb 17 08:46	27° $\overline{02}$ 38'41	8.10893 AU		3426 Aug 28 00:18	15° $\overline{M}$
direct	3420 Apr 24 23:35	24° $\overline{02}$ 08'39		evening set	3426 Oct 29 17:22	21° $\overline{M}$ 09'23
	3420 Jul 20 13:35	0° $\overline{M}$				
evening set	3420 Aug 08 15:20	2° $\overline{M}$ 19'30		conjunction	3426 Nov 15 19:43	23° $\overline{M}$ 13'36 2°06'36
				minimum elong	3426 Nov 15 19:44	23° $\overline{M}$ 13'37 2°06'37
conjunction	3420 Aug 26 16:56	4° $\overline{M}$ 38'04	1°02'46	max. Earth dist.	3426 Nov 15 21:07	23° $\overline{M}$ 14'02 10.69629 AU
minimum elong	3420 Aug 26 16:54	4° $\overline{M}$ 38'03	1°02'45	morning rise	3426 Dec 02 17:44	25° $\overline{M}$ 16'35
max. Earth dist.	3420 Aug 26 20:12	4° $\overline{M}$ 39'07	10.13426 AU		3427 Jan 16 08:41	0° $\overline{Z}$
morning rise	3420 Sep 13 16:07	6° $\overline{M}$ 55'53		retrograde	3427 Mar 12 14:35	2° $\overline{Z}$ 31'39
retrograde	3420 Dec 25 17:37	14° $\overline{M}$ 55'14			3427 May 09 12:29	30° $\overline{R}$ $\overline{M}$
opposition	3421 Mar 02 08:51	11° $\overline{M}$ 28'52	1°34'43	opposition	3427 May 19 23:21	29° $\overline{M}$ 12'34 2°29'50
min. Earth dist.	3421 Mar 02 06:00	11° $\overline{M}$ 29'27	8.16556 AU	min. Earth dist.	3427 May 19 22:36	29° $\overline{M}$ 12'42 8.74638 AU
direct	3421 May 09 07:43	7° $\overline{M}$ 59'24		direct	3427 Jul 29 13:06	25° $\overline{M}$ 48'42
evening set	3421 Aug 23 08:37	16° $\overline{M}$ 08'00			3427 Oct 12 11:29	0° $\overline{Z}$
				evening set	3427 Nov 11 05:19	3° $\overline{Z}$ 17'58
conjunction	3421 Sep 10 07:08	18° $\overline{M}$ 24'39	1°28'32			
minimum elong	3421 Sep 10 07:04	18° $\overline{M}$ 24'38	1°28'32	conjunction	3427 Nov 28 04:41	5° $\overline{Z}$ 20'13 1°55'48
max. Earth dist.	3421 Sep 10 10:22	18° $\overline{M}$ 25'41	10.20098 AU	minimum elong	3427 Nov 28 04:43	5° $\overline{Z}$ 20'13 1°55'48
morning rise	3421 Sep 28 02:14	20° $\overline{M}$ 40'16		max. Earth dist.	3427 Nov 28 05:12	5° $\overline{Z}$ 20'22 10.79185 AU
retrograde	3422 Jan 08 09:01	28° $\overline{M}$ 32'25		morning rise	3427 Dec 15 00:15	7° $\overline{Z}$ 21'22
opposition	3422 Mar 16 02:49	25° $\overline{M}$ 07'16	2°03'26	retrograde	3428 Mar 23 17:11	14° $\overline{Z}$ 30'58
min. Earth dist.	3422 Mar 16 00:29	25° $\overline{M}$ 07'45	8.24188 AU	opposition	3428 May 31 13:45	11° $\overline{Z}$ 12'40 2°13'15
direct	3422 May 23 13:28	21° $\overline{M}$ 38'10		min. Earth dist.	3428 May 31 14:01	11° $\overline{Z}$ 12'37 8.83629 AU
evening set	3422 Sep 06 19:14	29° $\overline{M}$ 42'42		direct	3428 Aug 10 09:15	7° $\overline{Z}$ 50'00



evening set	3428 Nov 22 09:32	15°♂12'04		direct	3434 Oct 21 13:07	17°♂03'25	
				evening set	3435 Jan 29 22:00	24°♂05'46	
conjunction	3428 Dec 09 06:27	17°♂12'39	1°40'10				
minimum elong	3428 Dec 09 06:30	17°♂12'39	1°40'10	conjunction	3435 Feb 15 13:55	26°♂03'48	0°-45'-2
max. Earth dist.	3428 Dec 09 05:37	17°♂12'24	10.87548 AU	minimum elong	3435 Feb 15 13:54	26°♂03'48	0°45'03
morning rise	3428 Dec 26 00:20	19°♂12'19		max. Earth dist.	3435 Feb 15 10:56	26°♂02'55	10.97375 AU
retrograde	3429 Apr 04 17:17	26°♂17'39		morning rise	3435 Mar 04 07:00	28°♂02'15	
opposition	3429 Jun 13 00:17	22°♂59'54	1°51'20		3435 Mar 21 17:13	0°♂	
min. Earth dist.	3429 Jun 13 01:06	22°♂59'45	8.91229 AU	retrograde	3435 Jun 14 15:41	5°♂13'01	
direct	3429 Aug 23 00:25	19°♂38'21		opposition	3435 Aug 24 10:55	1°♂53'02	-1°-10'-17
evening set	3429 Dec 04 07:05	26°♂53'59		min. Earth dist.	3435 Aug 24 13:07	1°♂52'37	8.94854 AU
					3435 Sep 20 09:27	30°♂	
conjunction	3429 Dec 21 02:13	28°♂53'15	1°20'34	direct	3435 Nov 02 10:20	28°♂34'28	
minimum elong	3429 Dec 21 02:15	28°♂53'16	1°20'33		3435 Dec 14 04:37	0°♂	
max. Earth dist.	3429 Dec 21 00:49	28°♂52'50	10.94344 AU	evening set	3436 Feb 10 12:38	5°♂38'20	
	3429 Dec 30 10:38	0°♂					
morning rise	3430 Jan 06 18:52	0°♂51'48		conjunction	3436 Feb 27 04:55	7°♂37'08	-1°-9'-7
retrograde	3430 Apr 16 15:26	7°♂54'15		minimum elong	3436 Feb 27 04:53	7°♂37'07	1°09'09
opposition	3430 Jun 25 08:02	4°♂36'45	1°25'12	max. Earth dist.	3436 Feb 27 01:51	7°♂36'13	10.91842 AU
min. Earth dist.	3430 Jun 25 08:44	4°♂36'38	8.97086 AU	morning rise	3436 Mar 14 23:11	9°♂36'33	
direct	3430 Sep 04 09:26	1°♂16'13		retrograde	3436 Jun 26 01:30	16°♂53'06	
evening set	3430 Dec 15 23:20	8°♂26'27		opposition	3436 Sep 04 20:19	13°♂31'57	-1°-38'-29
				min. Earth dist.	3436 Sep 04 22:41	13°♂31'31	8.88468 AU
conjunction	3431 Jan 01 17:11	10°♂24'46	0°57'53	direct	3436 Nov 13 09:52	10°♂13'06	
minimum elong	3431 Jan 01 17:13	10°♂24'47	0°57'53	evening set	3437 Feb 21 07:19	17°♂19'52	
max. Earth dist.	3431 Jan 01 15:52	10°♂24'23	10.99239 AU				
morning rise	3431 Jan 18 09:03	12°♂22'35		conjunction	3437 Mar 10 00:20	19°♂19'45	-1°-30'-38
retrograde	3431 Apr 28 13:29	19°♂23'41		minimum elong	3437 Mar 10 00:18	19°♂19'44	1°30'40
opposition	3431 Jul 07 13:46	16°♂06'12	0°55'56	max. Earth dist.	3437 Mar 09 20:43	19°♂18'40	10.84623 AU
min. Earth dist.	3431 Jul 07 15:04	16°♂05'58	9.00915 AU	morning rise	3437 Mar 26 20:16	21°♂20'30	
direct	3431 Sep 16 14:04	12°♂46'30		retrograde	3437 Jul 08 16:37	28°♂43'54	
evening set	3431 Dec 27 12:18	19°♂52'39		opposition	3437 Sep 17 09:02	25°♂21'29	-2°-3'00
				min. Earth dist.	3437 Sep 17 11:39	25°♂20'59	8.80535 AU
conjunction	3432 Jan 13 05:07	21°♂50'24	0°33'04	direct	3437 Nov 25 11:13	22°♂02'08	
minimum elong	3432 Jan 13 05:08	21°♂50'25	0°33'05	evening set	3438 Mar 05 07:23	29°♂13'07	
max. Earth dist.	3432 Jan 13 02:49	21°♂49'43	11.02004 AU		3438 Mar 11 20:09	0°♂	
morning rise	3432 Jan 29 20:45	23°♂47'51					
	3432 Apr 07 17:34	0°♂		conjunction	3438 Mar 22 01:53	1°♂14'26	-1°-48'-35
retrograde	3432 May 09 10:49	0°♂49'08		minimum elong	3438 Mar 22 01:51	1°♂14'25	1°48'36
	3432 Jun 10 18:03	30°♂		max. Earth dist.	3438 Mar 21 22:48	1°♂13'30	10.76005 AU
opposition	3432 Jul 18 18:17	27°♂31'27	0°24'38	morning rise	3438 Apr 07 23:55	3°♂16'49	
min. Earth dist.	3432 Jul 18 20:48	27°♂30'59	9.02571 AU	retrograde	3438 Jul 21 12:08	10°♂47'56	
direct	3432 Sep 27 14:04	24°♂12'22		opposition	3438 Sep 30 01:40	7°♂24'11	-2°-22'-40
	3432 Dec 26 19:52	0°♂		min. Earth dist.	3438 Sep 30 03:49	7°♂23'46	8.71367 AU
evening set	3433 Jan 06 23:26	1°♂15'54		direct	3438 Dec 07 17:28	4°♂04'09	
				evening set	3439 Mar 17 14:01	11°♂20'30	
conjunction	3433 Jan 23 15:30	3°♂13'24	0°07'03				
minimum elong	3433 Jan 23 15:31	3°♂13'24	0°07'04	conjunction	3439 Apr 03 10:48	13°♂23'39	-2°-2'-1
behind sun begin	3433 Jan 23 09:03	3°♂11'31		minimum elong	3439 Apr 03 10:46	13°♂23'38	2°02'02
behind sun end	3433 Jan 23 21:59	3°♂15'17		max. Earth dist.	3439 Apr 03 09:01	13°♂23'06	10.66320 AU
max. Earth dist.	3433 Jan 23 11:43	3°♂12'18	11.02580 AU	morning rise	3439 Apr 20 11:23	15°♂27'59	
morning rise	3433 Feb 09 07:25	5°♂10'52		retrograde	3439 Aug 03 16:28	23°♂07'20	
desc. node	3433 May 03 12:41	11°♂58'13		opposition	3439 Oct 12 22:46	19°♂42'15	-2°-36'-18
retrograde	3433 May 21 08:27	12°♂13'53		min. Earth dist.	3439 Oct 12 23:49	19°♂42'02	8.61317 AU
opposition	3433 Jul 30 22:49	8°♂55'42	0°-7'-34	direct	3439 Dec 20 04:00	16°♂21'25	
min. Earth dist.	3433 Jul 31 02:00	8°♂55'06	9.02057 AU	evening set	3440 Mar 29 04:27	23°♂44'06	
direct	3433 Oct 09 13:41	5°♂37'01					
evening set	3434 Jan 18 10:05	12°♂39'16		conjunction	3440 Apr 15 04:06	25°♂49'22	-2°-10'-5
				minimum elong	3440 Apr 15 04:05	25°♂49'22	2°10'05
conjunction	3434 Feb 04 01:53	14°♂36'52	0°-19'-21	max. Earth dist.	3440 Apr 15 02:58	25°♂49'02	10.55966 AU
minimum elong	3434 Feb 04 01:52	14°♂36'52	0°19'22	morning rise	3440 May 02 07:53	27°♂56'00	
max. Earth dist.	3434 Feb 03 22:10	14°♂35'47	11.01006 AU		3440 May 19 21:58	0°♂	
	3434 Feb 07 07:56	15°♂		retrograde	3440 Aug 16 04:19	5°♂43'39	
morning rise	3434 Feb 20 18:15	16°♂34'39		opposition	3440 Oct 25 00:47	2°♂17'20	-2°-42'-51
retrograde	3434 Jun 02 10:46	23°♂40'54		min. Earth dist.	3440 Oct 25 01:05	2°♂17'17	8.50817 AU
opposition	3434 Aug 12 04:08	20°♂21'55	0°-39'-35		3440 Nov 26 06:10	30°♂	
min. Earth dist.	3434 Aug 12 06:50	20°♂21'25	8.99443 AU	direct	3440 Dec 31 17:54	28°♂55'34	



	3441 Feb 04 14:29	0°♄		direct	3447 Mar 22 04:36	20°♄02'27	
evening set	3441 Apr 11 03:28	6°♄25'21		evening set	3447 Jul 04 09:17	28°♄11'03	
					3447 Jul 18 12:16	0°♄	
conjunction	3441 Apr 28 06:39	8°♄33'02	-2°-12'00				
minimum elong	3441 Apr 28 06:40	8°♄33'03	2°12'00	conjunction	3447 Jul 22 12:29	0°♄31'12	0°-13'-25
max. Earth dist.	3441 Apr 28 05:38	8°♄32'43	10.45425 AU	minimum elong	3447 Jul 22 12:29	0°♄31'12	0°13'27
morning rise	3441 May 15 14:21	10°♄42'10		behind sun begin	3447 Jul 22 08:31	0°♄29'55	
	3441 Jun 22 21:28	15°♄		behind sun end	3447 Jul 22 16:27	0°♄32'28	
retrograde	3441 Aug 29 21:34	18°♄37'49		max. Earth dist.	3447 Jul 22 16:27	0°♄32'28	10.06939 AU
opposition	3441 Nov 07 08:05	15°♄10'25	-2°-41'-28	morning rise	3447 Aug 09 16:15	2°♄51'32	
min. Earth dist.	3441 Nov 07 08:10	15°♄10'24	8.40374 AU	retrograde	3447 Nov 22 16:45	11°♄03'50	
	3441 Nov 09 12:45	15°♄♄		asc. node	3447 Dec 27 07:07	9°♄59'36	
direct	3442 Jan 13 15:26	11°♄47'35		opposition	3448 Jan 28 13:42	7°♄35'37	0°03'26
	3442 Mar 16 04:06	15°♄		min. Earth dist.	3448 Jan 28 10:40	7°♄36'15	8.07294 AU
evening set	3442 Apr 24 11:26	19°♄24'55		direct	3448 Apr 04 11:53	4°♄07'07	
				evening set	3448 Jul 18 09:22	12°♄17'57	
conjunction	3442 May 11 18:55	21°♄35'14	-2°-7'-16				
minimum elong	3442 May 11 18:57	21°♄35'15	2°07'16	conjunction	3448 Aug 05 12:58	14°♄38'01	0°18'51
max. Earth dist.	3442 May 11 18:10	21°♄35'00	10.35219 AU	minimum elong	3448 Aug 05 12:57	14°♄38'00	0°18'51
morning rise	3442 May 29 07:03	23°♄47'00		max. Earth dist.	3448 Aug 05 16:33	14°♄39'10	10.08288 AU
	3442 Jul 28 00:00	0°♄			3448 Aug 08 08:54	15°♄	
retrograde	3442 Sep 12 20:11	1°♄49'49		morning rise	3448 Aug 23 16:02	16°♄57'53	
	3442 Oct 30 10:49	30°♄♄		retrograde	3448 Dec 05 22:41	25°♄05'54	
opposition	3442 Nov 20 20:25	28°♄21'32	-2°-31'-37	opposition	3449 Feb 10 14:57	21°♄38'31	0°43'03
min. Earth dist.	3442 Nov 20 20:22	28°♄21'33	8.30519 AU	min. Earth dist.	3449 Feb 10 12:18	21°♄39'04	8.09902 AU
direct	3443 Jan 26 20:30	24°♄57'34		direct	3449 Apr 18 21:23	18°♄09'37	
	3443 Apr 15 12:32	0°♄		evening set	3449 Aug 02 08:50	26°♄20'47	
evening set	3443 May 08 04:50	2°♄42'34					
				conjunction	3449 Aug 20 11:15	28°♄39'53	0°49'47
conjunction	3443 May 25 17:06	4°♄55'34	-1°-55'-40	minimum elong	3449 Aug 20 11:13	28°♄39'52	0°49'47
minimum elong	3443 May 25 17:09	4°♄55'35	1°55'41	max. Earth dist.	3449 Aug 20 14:10	28°♄40'49	10.12072 AU
max. Earth dist.	3443 May 25 17:15	4°♄55'37	10.25883 AU		3449 Aug 30 20:18	0°♄	
morning rise	3443 Jun 12 09:44	7°♄09'57		morning rise	3449 Sep 07 12:02	0°♄58'27	
retrograde	3443 Sep 27 00:36	15°♄18'36		retrograde	3449 Dec 19 22:42	9°♄00'35	
opposition	3443 Dec 04 13:14	11°♄49'43	-2°-13'-18	opposition	3450 Feb 24 13:48	5°♄34'13	1°19'45
min. Earth dist.	3443 Dec 04 12:38	11°♄49'50	8.21797 AU	min. Earth dist.	3450 Feb 24 11:32	5°♄34'41	8.14799 AU
direct	3444 Feb 09 07:39	8°♄24'38		direct	3450 May 03 07:41	2°♄05'12	
evening set	3444 May 21 07:11	16°♄16'59		evening set	3450 Aug 17 04:49	10°♄14'50	
conjunction	3444 Jun 08 00:21	18°♄32'33	-1°-37'-29	conjunction	3450 Sep 04 04:40	12°♄32'17	1°17'32
minimum elong	3444 Jun 08 00:25	18°♄32'34	1°37'30	minimum elong	3450 Sep 04 04:37	12°♄32'16	1°17'31
max. Earth dist.	3444 Jun 08 02:01	18°♄33'04	10.17955 AU	max. Earth dist.	3450 Sep 04 06:46	12°♄32'58	10.17932 AU
morning rise	3444 Jun 25 21:13	20°♄49'19		morning rise	3450 Sep 22 01:50	14°♄48'53	
retrograde	3444 Oct 10 09:17	29°♄02'04		retrograde	3451 Jan 02 16:33	22°♄44'11	
opposition	3444 Dec 17 10:06	25°♄32'52	-1°-47'-3	opposition	3451 Mar 10 09:34	19°♄18'59	1°51'19
min. Earth dist.	3444 Dec 17 08:19	25°♄33'14	8.14734 AU	min. Earth dist.	3451 Mar 10 07:32	19°♄19'24	8.21564 AU
direct	3445 Feb 22 01:12	22°♄06'44		direct	3451 May 17 15:09	15°♄50'11	
	3445 Jun 03 23:31	0°♄		evening set	3451 Aug 31 18:49	23°♄56'37	
evening set	3445 Jun 04 17:37	0°♄05'43					
				conjunction	3451 Sep 18 15:06	26°♄11'55	1°40'29
conjunction	3445 Jun 22 15:17	2°♄23'28	-1°-13'-26	minimum elong	3451 Sep 18 15:03	26°♄11'54	1°40'28
minimum elong	3445 Jun 22 15:20	2°♄23'29	1°13'28	max. Earth dist.	3451 Sep 18 16:48	26°♄12'28	10.25446 AU
max. Earth dist.	3445 Jun 22 18:16	2°♄24'26	10.11924 AU	morning rise	3451 Oct 06 07:46	28°♄26'06	
morning rise	3445 Jul 10 15:43	4°♄42'10			3451 Oct 19 03:32	0°♄	
retrograde	3445 Oct 24 20:06	12°♄56'59		retrograde	3452 Jan 16 05:38	6°♄14'06	
opposition	3445 Dec 31 09:58	9°♄27'48	-1°-14'-9	opposition	3452 Mar 23 01:31	2°♄50'07	2°16'05
min. Earth dist.	3445 Dec 31 07:14	9°♄28'22	8.09773 AU	min. Earth dist.	3452 Mar 22 23:30	2°♄50'31	8.29801 AU
direct	3446 Mar 08 00:53	6°♄00'43			3452 May 03 14:11	30°♄♄	
evening set	3446 Jun 19 11:06	14°♄05'15		direct	3452 May 30 18:23	29°♄21'50	
					3452 Jun 26 20:27	0°♄	
conjunction	3446 Jul 07 12:14	16°♄24'36	0°-44'-50	evening set	3452 Sep 14 01:17	7°♄23'33	
minimum elong	3446 Jul 07 12:16	16°♄24'36	0°44'52				
max. Earth dist.	3446 Jul 07 16:02	16°♄25'49	10.08172 AU	conjunction	3452 Oct 01 17:25	9°♄36'24	1°57'33
morning rise	3446 Jul 25 15:05	18°♄44'32		minimum elong	3452 Oct 01 17:23	9°♄36'23	1°57'33
retrograde	3446 Nov 08 07:02	26°♄59'10		max. Earth dist.	3452 Oct 01 19:09	9°♄36'57	10.34260 AU
opposition	3447 Jan 14 11:30	23°♄30'20	0°-36'-31	morning rise	3452 Oct 19 05:16	11°♄47'58	
min. Earth dist.	3447 Jan 14 08:19	23°♄30'59	8.07240 AU	retrograde	3453 Jan 28 12:23	19°♄28'16	



opposition	3453 Apr 05 13:01	16°♄05'32	2°33'00	retrograde	3459 Apr 11 21:24	3°♄09'33	
min. Earth dist.	3453 Apr 05 11:37	16°♄05'49	8.39143 AU		3459 Jun 18 11:42	30°♄♂	
direct	3453 Jun 13 16:58	12°♄37'57		opposition	3459 Jun 20 09:22	29°♂51'28	1°37'00
evening set	3453 Sep 27 22:51	20°♄33'40		min. Earth dist.	3459 Jun 20 10:35	29°♂51'14	8.92791 AU
				direct	3459 Aug 30 09:17	26°♂29'57	
conjunction	3453 Oct 15 10:39	22°♄43'56	2°08'07		3459 Nov 06 15:11	0°♄	
minimum elong	3453 Oct 15 10:38	22°♄43'56	2°08'08	evening set	3459 Dec 11 07:50	3°♄43'06	
max. Earth dist.	3453 Oct 15 11:50	22°♄44'18	10.43973 AU				
morning rise	3453 Nov 01 17:51	24°♄52'51		conjunction	3459 Dec 28 02:15	5°♄42'01	1°08'01
	3453 Dec 19 07:13	0°♄		minimum elong	3459 Dec 28 02:17	5°♄42'01	1°08'00
retrograde	3454 Feb 10 11:15	2°♄25'26		max. Earth dist.	3459 Dec 28 00:25	5°♄41'28	10.95392 AU
	3454 Apr 06 18:29	30°♄♂		morning rise	3460 Jan 13 18:37	7°♄40'20	
opposition	3454 Apr 18 19:57	29°♄03'53	2°41'40	retrograde	3460 Apr 22 17:54	14°♄42'25	
min. Earth dist.	3454 Apr 18 19:27	29°♄03'59	8.49147 AU	opposition	3460 Jul 01 16:03	11°♄24'27	1°08'55
direct	3454 Jun 27 11:37	25°♄37'10		min. Earth dist.	3460 Jul 01 17:33	11°♄24'10	8.97623 AU
	3454 Sep 11 06:56	0°♄		direct	3460 Sep 10 16:57	8°♄03'49	
evening set	3454 Oct 11 10:38	3°♄25'52		evening set	3460 Dec 21 22:13	15°♄12'14	
conjunction	3454 Oct 28 18:09	5°♄33'35	2°12'02	conjunction	3461 Jan 07 15:29	17°♄10'22	0°44'00
minimum elong	3454 Oct 28 18:09	5°♄33'35	2°12'03	minimum elong	3461 Jan 07 15:31	17°♄10'22	0°43'59
max. Earth dist.	3454 Oct 28 18:22	5°♄33'39	10.54113 AU	max. Earth dist.	3461 Jan 07 13:32	17°♄09'47	10.99324 AU
morning rise	3454 Nov 14 21:13	7°♄39'58		morning rise	3461 Jan 24 07:25	19°♄08'07	
	3455 Feb 13 08:25	15°♄		retrograde	3461 May 04 15:35	26°♄09'33	
retrograde	3455 Feb 23 03:40	15°♄05'10		opposition	3461 Jul 13 20:58	22°♄51'29	0°38'21
	3455 Mar 04 23:46	15°♄♄		min. Earth dist.	3461 Jul 13 22:03	22°♄51'17	9.00576 AU
opposition	3455 May 01 21:58	11°♄44'40	2°42'11	direct	3461 Sep 22 20:05	19°♄31'39	
min. Earth dist.	3455 May 01 22:10	11°♄44'38	8.59324 AU	evening set	3462 Jan 02 09:52	26°♄36'33	
direct	3455 Jul 11 00:12	8°♄18'57					
	3455 Oct 16 01:37	15°♄		conjunction	3462 Jan 19 02:25	28°♄34'15	0°18'22
evening set	3455 Oct 24 12:29	16°♄00'02		minimum elong	3462 Jan 19 02:26	28°♄34'16	0°18'23
				max. Earth dist.	3462 Jan 19 01:07	28°♄33'53	11.01309 AU
conjunction	3455 Nov 10 16:15	18°♄05'24	2°09'31		3462 Jan 31 05:02	0°♄	
minimum elong	3455 Nov 10 16:15	18°♄05'24	2°09'32	morning rise	3462 Feb 04 18:10	0°♄31'47	
max. Earth dist.	3455 Nov 10 15:30	18°♄05'10	10.64201 AU	retrograde	3462 May 16 13:32	7°♄34'04	
morning rise	3455 Nov 27 15:53	20°♄09'30		opposition	3462 Jul 26 01:22	4°♄15'41	0°06'23
retrograde	3456 Mar 06 14:11	27°♄27'54		min. Earth dist.	3462 Jul 26 02:03	4°♄15'34	9.01545 AU
opposition	3456 May 13 18:59	24°♄08'17	2°35'05	direct	3462 Oct 04 19:40	0°♄56'31	
min. Earth dist.	3456 May 13 19:12	24°♄08'14	8.69196 AU	desc. node	3462 Oct 08 17:00	0°♄57'15	
direct	3456 Jul 23 06:06	20°♄43'38		evening set	3463 Jan 13 20:22	7°♄59'15	
evening set	3456 Nov 05 04:47	28°♄16'59					
	3456 Nov 19 10:52	0°♂		conjunction	3463 Jan 30 12:23	9°♄56'50	0°-8'00
conjunction	3456 Nov 22 05:29	0°♂20'15	2°01'05	minimum elong	3463 Jan 30 12:23	9°♄56'50	0°08'01
minimum elong	3456 Nov 22 05:31	0°♂20'15	2°01'06	behind sun begin	3463 Jan 30 06:07	9°♄55'00	
max. Earth dist.	3456 Nov 22 04:42	0°♂20'00	10.73761 AU	behind sun end	3463 Jan 30 18:38	9°♄58'39	
morning rise	3456 Dec 09 02:19	2°♂22'22		max. Earth dist.	3463 Jan 30 10:59	9°♄56'26	11.01271 AU
retrograde	3457 Mar 18 19:33	9°♂34'53		morning rise	3463 Feb 16 04:26	11°♄54'28	
opposition	3457 May 26 11:29	6°♂15'57	2°21'11		3463 Mar 16 14:54	15°♄	
min. Earth dist.	3457 May 26 11:29	6°♂15'57	8.78303 AU	retrograde	3463 May 28 14:26	18°♄59'04	
direct	3457 Aug 05 06:01	2°♂52'23		opposition	3463 Aug 07 06:03	15°♄40'11	0°-25'-49
evening set	3457 Nov 17 12:35	10°♂18'17		min. Earth dist.	3463 Aug 07 07:19	15°♄39'57	9.00495 AU
					3463 Aug 16 08:40	15°♄♄	
conjunction	3457 Dec 04 10:47	12°♂19'46	1°47'28	direct	3463 Oct 16 17:41	12°♄21'27	
minimum elong	3457 Dec 04 10:49	12°♂19'46	1°47'28		3463 Dec 13 21:04	15°♄	
max. Earth dist.	3457 Dec 04 10:25	12°♂19'39	10.82361 AU	evening set	3464 Jan 25 07:29	19°♄23'27	
morning rise	3457 Dec 21 05:23	14°♂20'14					
retrograde	3458 Mar 30 23:04	21°♂27'58		conjunction	3464 Feb 10 23:13	21°♄21'14	0°-34'-2
opposition	3458 Jun 08 00:04	18°♂09'34	2°01'27	minimum elong	3464 Feb 10 23:11	21°♄21'14	0°34'02
min. Earth dist.	3458 Jun 08 00:23	18°♂09'30	8.86266 AU	max. Earth dist.	3464 Feb 10 20:55	21°♄20'33	10.99217 AU
direct	3458 Aug 17 22:53	14°♂47'03		morning rise	3464 Feb 27 16:00	23°♄19'19	
evening set	3458 Nov 29 13:11	22°♂06'06			3464 May 15 21:13	0°♄	
				retrograde	3464 Jun 08 15:58	0°♄27'36	
conjunction	3458 Dec 16 09:17	24°♂06'09	1°29'28		3464 Jul 02 18:23	30°♄♄	
minimum elong	3458 Dec 16 09:19	24°♂06'09	1°29'28	opposition	3464 Aug 18 11:43	27°♄08'02	0°-57'-10
max. Earth dist.	3458 Dec 16 08:36	24°♂05'57	10.89662 AU	min. Earth dist.	3464 Aug 18 13:28	27°♄07'42	8.97468 AU
morning rise	3459 Jan 02 02:24	26°♂05'21		direct	3464 Oct 27 14:30	23°♄49'30	
	3459 Feb 07 16:19	0°♄			3465 Jan 28 06:54	0°♄	
				evening set	3465 Feb 04 20:28	0°♄52'15	



conjunction	3465 Feb 21 12:24	2° <del>✕</del> 50'33	0°-58'-53	conjunction	3471 May 06 01:29	15° <del>8</del> 56'24	-2°-10'-2
minimum elong	3465 Feb 21 12:22	2° <del>✕</del> 50'32	0°58'54	minimum elong	3471 May 06 01:31	15° <del>8</del> 56'25	2°10'03
max. Earth dist.	3465 Feb 21 10:14	2° <del>✕</del> 49'54	10.95223 AU	max. Earth dist.	3471 May 06 01:06	15° <del>8</del> 56'17	10.43040 AU
morning rise	3465 Mar 10 06:09	4° <del>✕</del> 49'23		morning rise	3471 May 23 11:14	18° <del>8</del> 06'28	
retrograde	3465 Jun 20 22:54	12° <del>✕</del> 02'43		retrograde	3471 Sep 06 20:52	26° <del>8</del> 04'27	
opposition	3465 Aug 30 19:35	8° <del>✕</del> 42'15	-1°-26'-30	opposition	3471 Nov 15 02:43	22° <del>8</del> 37'15	-2°-36'-46
min. Earth dist.	3465 Aug 30 20:54	8° <del>✕</del> 42'00	8.92573 AU	min. Earth dist.	3471 Nov 15 02:43	22° <del>8</del> 37'15	8.38042 AU
direct	3465 Nov 08 14:30	5° <del>✕</del> 23'45		direct	3472 Jan 21 06:59	19° <del>8</del> 14'30	
evening set	3466 Feb 16 12:42	12° <del>✕</del> 28'32		evening set	3472 May 01 08:03	26° <del>8</del> 54'21	
conjunction	3466 Mar 05 05:21	14° <del>✕</del> 27'43	-1°-21'-33	conjunction	3472 May 18 17:56	29° <del>8</del> 05'41	-2°-1'-35
minimum elong	3466 Mar 05 05:19	14° <del>✕</del> 27'42	1°21'35	minimum elong	3472 May 18 17:59	29° <del>8</del> 05'42	2°01'36
max. Earth dist.	3466 Mar 05 04:20	14° <del>✕</del> 27'25	10.89432 AU	max. Earth dist.	3472 May 18 17:50	29° <del>8</del> 05'39	10.32982 AU
morning rise	3466 Mar 22 00:20	16° <del>✕</del> 27'39			3472 May 25 21:40	0° <del>II</del>	
retrograde	3466 Jul 03 12:11	23° <del>✕</del> 47'10		morning rise	3472 Jun 05 08:06	1° <del>II</del> 18'25	
opposition	3466 Sep 12 06:18	20° <del>✕</del> 25'39	-1°-52'-40	retrograde	3472 Sep 19 23:07	9° <del>II</del> 22'58	
min. Earth dist.	3466 Sep 12 06:44	20° <del>✕</del> 25'34	8.85990 AU	opposition	3472 Nov 27 16:27	5° <del>II</del> 54'56	-2°-22'-22
direct	3466 Nov 20 14:29	17° <del>✕</del> 07'00		min. Earth dist.	3472 Nov 27 16:00	5° <del>II</del> 55'02	8.28400 AU
evening set	3467 Feb 28 09:54	24° <del>✕</del> 15'08		direct	3473 Feb 02 12:54	2° <del>II</del> 30'57	
conjunction	3467 Mar 17 03:41	26° <del>✕</del> 15'32	-1°-41'-6	evening set	3473 May 15 05:11	10° <del>II</del> 18'24	
minimum elong	3467 Mar 17 03:38	26° <del>✕</del> 15'31	1°41'08	conjunction	3473 Jun 01 19:50	12° <del>II</del> 32'23	-1°-46'-25
max. Earth dist.	3467 Mar 17 02:45	26° <del>✕</del> 15'15	10.82066 AU	minimum elong	3473 Jun 01 19:53	12° <del>II</del> 32'24	1°46'27
morning rise	3467 Apr 03 00:27	28° <del>✕</del> 16'53		max. Earth dist.	3473 Jun 01 19:38	12° <del>II</del> 32'19	10.23954 AU
	3467 Apr 17 22:53	0° <del>Y</del>		morning rise	3473 Jun 19 14:32	14° <del>II</del> 47'40	
retrograde	3467 Jul 16 05:56	5° <del>Y</del> 43'27		retrograde	3473 Oct 04 04:54	22° <del>II</del> 57'16	
opposition	3467 Sep 24 20:27	2° <del>Y</del> 20'50	-2°-14'-29	opposition	3473 Dec 11 10:28	19° <del>II</del> 28'37	-1°-59'-47
min. Earth dist.	3467 Sep 24 20:53	2° <del>Y</del> 20'45	8.77965 AU	min. Earth dist.	3473 Dec 11 10:05	19° <del>II</del> 28'42	8.20071 AU
	3467 Oct 29 06:26	30° <del>R</del> <del>✕</del>		direct	3474 Feb 16 02:38	16° <del>II</del> 03'21	
direct	3467 Dec 02 16:34	29° <del>✕</del> 01'44		evening set	3474 May 29 10:50	23° <del>II</del> 57'56	
	3468 Jan 05 10:24	0° <del>Y</del>		conjunction	3474 Jun 16 06:10	26° <del>II</del> 14'21	-1°-25'-4
evening set	3468 Mar 11 13:08	6° <del>Y</del> 14'30		minimum elong	3474 Jun 16 06:13	26° <del>II</del> 14'22	1°25'05
conjunction	3468 Mar 28 08:34	8° <del>Y</del> 16'27	-1°-56'-34	max. Earth dist.	3474 Jun 16 06:14	26° <del>II</del> 14'22	10.16508 AU
minimum elong	3468 Mar 28 08:32	8° <del>Y</del> 16'26	1°56'35	morning rise	3474 Jul 04 04:58	28° <del>II</del> 31'52	
max. Earth dist.	3468 Mar 28 07:03	8° <del>Y</del> 15'59	10.73404 AU		3474 Jul 16 02:17	0° <del>☾</del>	
morning rise	3468 Apr 14 07:47	10° <del>Y</del> 19'32		retrograde	3474 Oct 18 12:45	6° <del>☾</del> 44'37	
retrograde	3468 Jul 28 05:57	17° <del>Y</del> 53'49		opposition	3474 Dec 25 07:56	3° <del>☾</del> 15'39	-1°-29'-56
opposition	3468 Oct 06 14:56	14° <del>Y</del> 30'01	-2°-30'-47	min. Earth dist.	3474 Dec 25 07:27	3° <del>☾</del> 15'45	8.13559 AU
min. Earth dist.	3468 Oct 06 15:48	14° <del>Y</del> 29'51	8.68794 AU		3475 Feb 16 01:27	30° <del>R</del> <del>II</del>	
direct	3468 Dec 14 00:07	11° <del>Y</del> 10'16		direct	3475 Mar 01 23:33	29° <del>II</del> 49'09	
evening set	3469 Mar 23 23:12	18° <del>Y</del> 28'40			3475 Mar 15 20:11	0° <del>☾</del>	
conjunction	3469 Apr 09 21:06	20° <del>Y</del> 32'31	-2°-7'-3	evening set	3475 Jun 12 23:58	7° <del>☾</del> 50'00	
minimum elong	3469 Apr 09 21:04	20° <del>Y</del> 32'31	2°07'03	conjunction	3475 Jun 30 23:19	10° <del>☾</del> 08'22	0°-58'-31
max. Earth dist.	3469 Apr 09 19:32	20° <del>Y</del> 32'02	10.63766 AU	minimum elong	3475 Jun 30 23:21	10° <del>☾</del> 08'23	0°58'32
morning rise	3469 Apr 26 23:17	22° <del>Y</del> 37'41		max. Earth dist.	3475 Jul 01 00:03	10° <del>☾</del> 08'36	10.11088 AU
	3469 Jul 21 12:47	0° <del>8</del>		morning rise	3475 Jul 19 01:11	12° <del>☾</del> 27'31	
retrograde	3469 Aug 10 12:08	0° <del>8</del> 20'01		retrograde	3475 Nov 01 21:33	20° <del>☾</del> 41'22	
	3469 Aug 30 13:59	30° <del>R</del> <del>Y</del>		opposition	3476 Jan 08 07:42	17° <del>☾</del> 12'24	0°-54'-25
opposition	3469 Oct 19 14:02	26° <del>Y</del> 55'00	-2°-40'-31	min. Earth dist.	3476 Jan 08 06:44	17° <del>☾</del> 12'36	8.09263 AU
min. Earth dist.	3469 Oct 19 15:06	26° <del>Y</del> 54'48	8.58810 AU	direct	3476 Mar 15 00:43	13° <del>☾</del> 44'48	
direct	3469 Dec 26 12:30	23° <del>Y</del> 34'24		evening set	3476 Jun 26 18:47	21° <del>☾</del> 50'38	
	3470 Mar 28 11:18	0° <del>8</del>		conjunction	3476 Jul 14 21:02	24° <del>☾</del> 10'18	0°-28'-18
evening set	3470 Apr 05 17:16	0° <del>8</del> 59'20		minimum elong	3476 Jul 14 21:04	24° <del>☾</del> 10'18	0°28'20
conjunction	3470 Apr 22 18:34	3° <del>8</del> 05'27	-2°-11'-45	max. Earth dist.	3476 Jul 14 22:41	24° <del>☾</del> 10'49	10.08029 AU
minimum elong	3470 Apr 22 18:34	3° <del>8</del> 05'27	2°11'45	morning rise	3476 Aug 02 00:35	26° <del>☾</del> 30'21	
max. Earth dist.	3470 Apr 22 17:41	3° <del>8</del> 05'10	10.53499 AU		3476 Aug 31 05:24	0° <del>♊</del>	
morning rise	3470 May 10 00:16	5° <del>8</del> 12'57		retrograde	3476 Nov 15 06:58	4° <del>♊</del> 43'10	
retrograde	3470 Aug 24 00:43	13° <del>8</del> 03'19		opposition	3477 Jan 21 08:39	1° <del>♊</del> 14'28	0°-15'-24
opposition	3470 Nov 01 17:51	9° <del>8</del> 37'09	-2°-42'-44	min. Earth dist.	3477 Jan 21 06:53	1° <del>♊</del> 14'50	8.07450 AU
min. Earth dist.	3470 Nov 01 18:28	9° <del>8</del> 37'01	8.48388 AU		3477 Feb 05 18:24	30° <del>R</del> <del>☾</del>	
direct	3471 Jan 08 07:08	6° <del>8</del> 15'32		direct	3477 Mar 29 05:43	27° <del>☾</del> 45'59	
evening set	3471 Apr 18 20:06	13° <del>8</del> 47'45			3477 May 18 15:29	0° <del>♊</del>	
	3471 Apr 28 13:21	15° <del>8</del>		asc. node	3477 Jun 16 06:37	2° <del>♊</del> 50'52	
				evening set	3477 Jul 11 17:04	5° <del>♊</del> 55'14	



conjunction	3477 Jul 29 20:44	8°♏15'20	0°03'46	min. Earth dist.	3483 Apr 12 20:38	23°♑11'45	8.43567 AU
minimum elong	3477 Jul 29 20:45	8°♏15'20	0°03'46	direct	3483 Jun 21 10:17	19°♑43'52	
behind sun begin	3477 Jul 29 13:28	8°♏13'00		evening set	3483 Oct 05 10:42	27°♑36'00	
behind sun end	3477 Jul 30 04:02	8°♏17'40					
max. Earth dist.	3477 Jul 29 23:18	8°♏16'07	10.07510 AU	conjunction	3483 Oct 22 20:20	29°♑44'58	2°10'57
morning rise	3477 Aug 17 00:21	10°♏35'26		minimum elong	3483 Oct 22 20:19	29°♑44'57	2°10'57
	3477 Sep 23 20:15	15°♏		max. Earth dist.	3483 Oct 22 21:47	29°♑45'25	10.48649 AU
retrograde	3477 Nov 29 14:07	18°♏45'15			3483 Oct 24 20:40	0°♐	
opposition	3478 Feb 04 09:33	15°♏17'06	0°24'34	morning rise	3483 Nov 09 01:28	1°♐52'35	
min. Earth dist.	3478 Feb 04 07:10	15°♏17'35	8.08212 AU	retrograde	3484 Feb 17 12:30	9°♐21'18	
	3478 Feb 07 20:41	15°♐♏		opposition	3484 Apr 25 02:29	6°♐00'00	2°42'52
direct	3478 Apr 12 13:21	11°♏47'59		min. Earth dist.	3484 Apr 25 00:46	6°♐00'20	8.54023 AU
	3478 Jun 12 23:39	15°♏		direct	3484 Jul 04 00:22	2°♐33'37	
evening set	3478 Jul 26 16:27	19°♏58'52		evening set	3484 Oct 17 17:10	10°♐18'19	
conjunction	3478 Aug 13 19:47	22°♏18'32	0°35'26	conjunction	3484 Nov 03 22:55	12°♐24'50	2°11'25
minimum elong	3478 Aug 13 19:46	22°♏18'31	0°35'26	minimum elong	3484 Nov 03 22:55	12°♐24'50	2°11'26
max. Earth dist.	3478 Aug 13 22:41	22°♏19'28	10.09535 AU	max. Earth dist.	3484 Nov 04 00:26	12°♐25'18	10.59139 AU
morning rise	3478 Aug 31 21:45	24°♏37'48		morning rise	3484 Nov 21 00:06	14°♐30'00	
	3478 Oct 18 20:44	0°♐			3484 Nov 25 04:15	15°♐	
retrograde	3478 Dec 13 17:07	2°♐42'49		retrograde	3485 Mar 01 02:39	21°♐51'34	
	3479 Feb 09 06:50	30°♐♏		opposition	3485 May 08 01:41	18°♐31'27	2°39'16
opposition	3479 Feb 18 09:06	29°♏15'30	1°02'52	min. Earth dist.	3485 May 08 00:45	18°♐31'37	8.64419 AU
min. Earth dist.	3479 Feb 18 06:47	29°♏15'59	8.11482 AU	direct	3485 Jul 17 07:55	15°♐06'16	
direct	3479 Apr 26 22:01	25°♏46'04		evening set	3485 Oct 30 14:13	22°♐43'18	
	3479 Jul 07 23:16	0°♐					
evening set	3479 Aug 10 13:55	3°♐56'39		conjunction	3485 Nov 16 16:26	24°♐47'34	2°05'43
conjunction	3479 Aug 28 15:18	6°♐15'03	1°04'52	minimum elong	3485 Nov 16 16:28	24°♐47'34	2°05'43
minimum elong	3479 Aug 28 15:15	6°♐15'02	1°04'51	max. Earth dist.	3485 Nov 16 17:14	24°♐47'48	10.69330 AU
max. Earth dist.	3479 Aug 28 17:58	6°♐15'55	10.13967 AU	morning rise	3485 Dec 03 14:28	26°♐50'35	
morning rise	3479 Sep 15 14:13	8°♐32'43			3485 Dec 31 16:30	0°♑	
retrograde	3479 Dec 27 14:34	16°♐31'37		retrograde	3486 Mar 13 10:25	4°♑05'48	
opposition	3480 Mar 03 06:18	13°♐05'20	1°37'05	opposition	3486 May 20 20:33	0°♑46'40	2°28'27
min. Earth dist.	3480 Mar 03 04:22	13°♐05'44	8.17050 AU	min. Earth dist.	3486 May 20 20:35	0°♑46'40	8.74277 AU
direct	3480 May 10 05:29	9°♐35'53			3486 May 31 03:12	30°♐♐	
evening set	3480 Aug 24 06:42	17°♐44'12		direct	3486 Jul 30 10:34	27°♐22'45	
					3486 Sep 26 12:45	0°♑	
				evening set	3486 Nov 12 02:14	4°♑52'11	
conjunction	3480 Sep 11 04:52	20°♐00'42	1°30'14	conjunction	3486 Nov 29 01:27	6°♑54'28	1°54'26
minimum elong	3480 Sep 11 04:49	20°♐00'41	1°30'13	minimum elong	3486 Nov 29 01:29	6°♑54'28	1°54'26
max. Earth dist.	3480 Sep 11 06:58	20°♐01'22	10.20529 AU	max. Earth dist.	3486 Nov 29 01:05	6°♑54'21	10.78768 AU
morning rise	3480 Sep 28 23:48	22°♐16'11		morning rise	3486 Dec 15 21:08	8°♑55'41	
	3480 Dec 28 06:45	0°♑		retrograde	3487 Mar 25 14:29	16°♑05'34	
retrograde	3481 Jan 09 06:11	0°♑07'59		opposition	3487 Jun 02 11:12	12°♑47'13	2°11'20
	3481 Jan 21 05:29	30°♐♐		min. Earth dist.	3487 Jun 02 11:24	12°♑47'11	8.83164 AU
opposition	3481 Mar 17 00:02	26°♐42'53	2°05'14	direct	3487 Aug 12 07:21	9°♑24'31	
min. Earth dist.	3481 Mar 16 22:35	26°♐43'11	8.24563 AU	evening set	3487 Nov 24 06:26	16°♑46'47	
direct	3481 May 24 10:55	23°♐13'45					
	3481 Aug 28 00:59	0°♑		conjunction	3487 Dec 11 03:25	18°♑47'27	1°38'23
evening set	3481 Sep 07 16:55	1°♑18'04		minimum elong	3487 Dec 11 03:27	18°♑47'28	1°38'23
conjunction	3481 Sep 25 11:03	3°♑32'13	1°50'12	max. Earth dist.	3487 Dec 11 02:46	18°♑47'15	10.87049 AU
minimum elong	3481 Sep 25 11:00	3°♑32'12	1°50'11	morning rise	3487 Dec 27 21:20	20°♑47'12	
max. Earth dist.	3481 Sep 25 12:20	3°♑32'38	10.28820 AU	retrograde	3488 Apr 05 14:50	27°♑52'55	
morning rise	3481 Oct 13 01:24	5°♑45'10		opposition	3488 Jun 13 22:02	24°♑35'05	1°48'58
retrograde	3482 Jan 22 14:23	13°♑29'16		min. Earth dist.	3488 Jun 13 22:03	24°♑35'05	8.90699 AU
opposition	3482 Mar 30 13:28	10°♑05'27	2°25'58	direct	3488 Aug 23 21:45	21°♑13'33	
min. Earth dist.	3482 Mar 30 12:04	10°♑05'44	8.33570 AU	evening set	3488 Dec 05 04:08	28°♑29'25	
direct	3482 Jun 07 12:59	6°♑36'59			3488 Dec 17 22:50	0°♒	
evening set	3482 Sep 21 18:38	14°♑35'48		conjunction	3488 Dec 21 23:25	0°♒28'48	1°18'27
conjunction	3482 Oct 09 08:28	16°♑47'22	2°03'53	minimum elong	3488 Dec 21 23:27	0°♒28'48	1°18'26
minimum elong	3482 Oct 09 08:26	16°♑47'21	2°03'53	max. Earth dist.	3488 Dec 21 23:01	0°♒28'41	10.93805 AU
max. Earth dist.	3482 Oct 09 09:31	16°♑47'42	10.38366 AU	morning rise	3489 Jan 07 16:03	2°♒27'26	
morning rise	3482 Oct 26 18:05	18°♑57'38		retrograde	3489 Apr 17 14:10	9°♒30'19	
retrograde	3483 Feb 04 15:48	26°♑33'56		opposition	3489 Jun 26 06:07	6°♒12'47	1°22'27
opposition	3483 Apr 12 22:24	23°♑11'24	2°38'33	min. Earth dist.	3489 Jun 26 06:29	6°♒12'43	8.96545 AU



direct	3489 Sep 05 07:10	2°♄52'15		min. Earth dist.	3495 Sep 06 22:52	15°♄12'05	8.88261 AU
evening set	3489 Dec 16 20:46	10°♄02'44		direct	3495 Nov 15 08:28	11°♄53'46	
				evening set	3496 Feb 23 06:28	19°♄00'43	
conjunction	3490 Jan 02 14:37	12°♄01'09	0°55'31				
minimum elong	3490 Jan 02 14:39	12°♄01'10	0°55'31	conjunction	3496 Mar 10 23:34	21°♄00'38	-1°-32'-26
max. Earth dist.	3490 Jan 02 13:33	12°♄00'50	10.98719 AU	minimum elong	3496 Mar 10 23:32	21°♄00'37	1°32'27
morning rise	3490 Jan 19 06:32	13°♄59'03		max. Earth dist.	3496 Mar 10 20:22	20°♄59'40	10.84447 AU
retrograde	3490 Apr 29 12:13	21°♄00'32		morning rise	3496 Mar 27 19:36	23°♄01'26	
opposition	3490 Jul 08 12:16	17°♄43'03	0°52'56		3496 Jun 17 01:29	0°♄	
min. Earth dist.	3490 Jul 08 13:48	17°♄42'46	9.00427 AU	retrograde	3496 Jul 09 15:05	0°♄25'06	
direct	3490 Sep 17 10:47	14°♄23'21			3496 Aug 01 11:28	30°♄	
evening set	3490 Dec 28 10:00	21°♄29'44		opposition	3496 Sep 18 08:52	27°♄02'41	-2°-4'-58
				min. Earth dist.	3496 Sep 18 11:08	27°♄02'15	8.80394 AU
conjunction	3491 Jan 14 02:44	23°♄27'33	0°30'32	direct	3496 Nov 26 11:15	23°♄43'21	
minimum elong	3491 Jan 14 02:45	23°♄27'34	0°30'33		3497 Feb 26 13:06	0°♄	
max. Earth dist.	3491 Jan 14 00:08	23°♄26'47	11.01557 AU	evening set	3497 Mar 06 06:45	0°♄54'27	
morning rise	3491 Jan 30 18:32	25°♄25'06					
	3491 Mar 16 13:01	0°♄		conjunction	3497 Mar 23 01:27	2°♄55'50	-1°-49'-56
retrograde	3491 May 11 08:20	2°♄26'46		minimum elong	3497 Mar 23 01:24	2°♄55'49	1°49'58
	3491 Jul 09 01:51	30°♄		max. Earth dist.	3497 Mar 22 23:23	2°♄55'12	10.75892 AU
opposition	3491 Jul 20 17:08	29°♄09'03	0°21'30	morning rise	3497 Apr 08 23:27	4°♄58'14	
min. Earth dist.	3491 Jul 20 19:37	29°♄08'36	9.02161 AU	retrograde	3497 Jul 22 13:21	12°♄29'33	
direct	3491 Sep 29 12:45	25°♄49'59		opposition	3497 Oct 01 01:33	9°♄05'46	-2°-24'-2
	3491 Dec 13 09:11	0°♄		min. Earth dist.	3497 Oct 01 02:50	9°♄05'32	8.71293 AU
evening set	3492 Jan 08 21:14	2°♄53'43		direct	3497 Dec 08 17:34	5°♄45'47	
				evening set	3498 Mar 18 13:35	13°♄02'09	
conjunction	3492 Jan 25 13:23	4°♄51'18	0°04'29				
minimum elong	3492 Jan 25 13:23	4°♄51'18	0°04'29	conjunction	3498 Apr 04 10:27	15°♄05'19	-2°-2'-52
behind sun begin	3492 Jan 25 06:32	4°♄49'18		minimum elong	3498 Apr 04 10:26	15°♄05'18	2°02'53
behind sun end	3492 Jan 25 20:14	4°♄53'18		max. Earth dist.	3498 Apr 04 09:08	15°♄04'55	10.66280 AU
max. Earth dist.	3492 Jan 25 10:08	4°♄50'22	11.02200 AU	morning rise	3498 Apr 21 11:07	17°♄09'42	
morning rise	3492 Feb 11 05:22	6°♄48'49		retrograde	3498 Aug 04 17:49	24°♄49'06	
desc. node	3492 Mar 28 12:27	11°♄31'17		opposition	3498 Oct 13 22:43	21°♄24'00	-2°-37'00
retrograde	3492 May 22 08:15	13°♄52'16		min. Earth dist.	3498 Oct 13 23:18	21°♄23'53	8.61321 AU
opposition	3492 Jul 31 21:50	10°♄34'03	0°-10'-43	direct	3498 Dec 21 02:16	18°♄03'11	
min. Earth dist.	3492 Aug 01 00:08	10°♄33'37	9.01703 AU	evening set	3499 Mar 31 04:13	25°♄25'50	
direct	3492 Oct 10 13:11	7°♄15'25					
evening set	3493 Jan 19 08:14	14°♄17'52		conjunction	3499 Apr 17 03:55	27°♄31'07	-2°-10'-22
	3493 Jan 25 08:35	15°♄		minimum elong	3499 Apr 17 03:54	27°♄31'06	2°10'22
conjunction	3493 Feb 05 00:09	16°♄15'32	0°-21'-54	max. Earth dist.	3499 Apr 17 02:19	27°♄30'37	10.56015 AU
minimum elong	3493 Feb 05 00:08	16°♄15'32	0°21'55	morning rise	3499 May 04 07:57	29°♄37'45	
max. Earth dist.	3493 Feb 04 21:31	16°♄14'45	11.00669 AU		3499 May 07 09:40	0°♄	
morning rise	3493 Feb 21 16:28	18°♄13'23		retrograde	3499 Aug 18 03:49	7°♄25'20	
retrograde	3493 Jun 03 10:07	25°♄20'01		opposition	3499 Oct 27 00:37	3°♄59'00	-2°-42'-49
opposition	3493 Aug 13 03:19	22°♄01'02	0°-42'-38	min. Earth dist.	3499 Oct 27 01:17	3°♄58'52	8.50906 AU
min. Earth dist.	3493 Aug 13 05:15	22°♄00'41	8.99129 AU	direct	3500 Jan 02 17:39	0°♄37'11	
direct	3493 Oct 22 10:37	18°♄42'37		evening set	3500 Apr 13 03:14	8°♄06'53	
evening set	3494 Jan 30 20:33	25°♄45'10					
conjunction	3494 Feb 16 12:27	27°♄43'16	0°-47'-26	conjunction	3500 Apr 30 06:34	10°♄14'36	-2°-11'-41
minimum elong	3494 Feb 16 12:25	27°♄43'15	0°47'28	minimum elong	3500 Apr 30 06:34	10°♄14'36	2°11'42
max. Earth dist.	3494 Feb 16 09:39	27°♄42'26	10.97080 AU	max. Earth dist.	3500 Apr 30 05:08	10°♄14'09	10.45559 AU
morning rise	3494 Mar 05 05:34	29°♄41'46		morning rise	3500 May 17 14:33	12°♄23'44	
	3494 Mar 07 20:28	0°♄			3500 Jun 08 18:27	15°♄	
retrograde	3494 Jun 15 16:01	6°♄52'55		retrograde	3500 Aug 31 20:28	20°♄19'10	
opposition	3494 Aug 25 10:33	3°♄32'57	-1°-13'-5	opposition	3500 Nov 09 07:44	16°♄51'45	-2°-40'-42
min. Earth dist.	3494 Aug 25 12:43	3°♄32'33	8.94586 AU	min. Earth dist.	3500 Nov 09 08:18	16°♄51'38	8.40541 AU
direct	3494 Nov 03 09:16	0°♄14'27			3500 Dec 04 06:12	15°♄	
evening set	3495 Feb 11 11:28	7°♄18'30		direct	3501 Jan 15 15:46	13°♄28'52	
				evening set	3501 Feb 26 01:23	15°♄	
conjunction	3495 Feb 28 03:41	9°♄17'21	-1°-11'-16		3501 Apr 26 11:03	21°♄06'01	
minimum elong	3495 Feb 28 03:39	9°♄17'20	1°11'18	conjunction	3501 May 13 18:47	23°♄16'20	-2°-6'-22
max. Earth dist.	3495 Feb 28 00:11	9°♄16'18	10.91603 AU	minimum elong	3501 May 13 18:49	23°♄16'21	2°06'23
morning rise	3495 Mar 16 22:07	11°♄16'50		max. Earth dist.	3501 May 13 18:22	23°♄16'12	10.35424 AU
retrograde	3495 Jun 28 01:23	18°♄33'43		morning rise	3501 May 31 07:06	25°♄28'07	
opposition	3495 Sep 06 20:12	15°♄12'36	-1°-40'-55		3501 Jul 10 12:20	0°♄	
				retrograde	3501 Sep 14 19:38	3°♄30'36	



opposition	3501 Nov 22 19:45	0°II02'18	-2°-30'-9	max. Earth dist.	3507 Aug 08 14:08	16°Ω15'20	10.08519 AU
min. Earth dist.	3501 Nov 22 19:41	0°II02'19	8.30752 AU	morning rise	3507 Aug 26 14:19	18°Ω34'13	
	3501 Nov 23 07:16	30°R8		retrograde	3507 Dec 08 18:55	26°Ω41'57	
direct	3502 Jan 28 20:01	26°838'17		opposition	3508 Feb 13 12:16	23°Ω14'38	0°45'58
	3502 Apr 01 15:44	0°II		min. Earth dist.	3508 Feb 13 09:43	23°Ω15'10	8.10128 AU
evening set	3502 May 10 04:16	4°II23'01		direct	3508 Apr 20 20:34	19°Ω45'45	
				evening set	3508 Aug 04 07:01	27°Ω56'54	
conjunction	3502 May 27 16:52	6°II36'01	-1°-54'-14		3508 Aug 20 07:57	0°η	
minimum elong	3502 May 27 16:55	6°II36'02	1°54'15				
max. Earth dist.	3502 May 27 17:51	6°II36'20	10.26143 AU	conjunction	3508 Aug 22 09:21	0°η15'56	0°52'00
morning rise	3502 Jun 14 09:37	8°II50'23		minimum elong	3508 Aug 22 09:19	0°η15'55	0°52'00
retrograde	3502 Sep 28 23:33	16°II58'37		max. Earth dist.	3508 Aug 22 12:23	0°η16'54	10.12301 AU
opposition	3502 Dec 06 12:10	13°II29'42	-2°-11'-12	morning rise	3508 Sep 09 09:56	2°η34'24	
min. Earth dist.	3502 Dec 06 11:02	13°II29'55	8.22075 AU	retrograde	3508 Dec 21 18:57	10°η36'21	
direct	3503 Feb 11 07:15	10°II04'33		opposition	3509 Feb 26 11:00	7°η10'03	1°22'18
evening set	3503 May 24 06:31	17°II56'37		min. Earth dist.	3509 Feb 26 08:13	7°η10'37	8.15052 AU
				direct	3509 May 05 05:14	3°η41'05	
conjunction	3503 Jun 10 23:57	20°II12'11	-1°-35'-35	evening set	3509 Aug 19 02:45	11°η50'37	
minimum elong	3503 Jun 11 00:01	20°II12'12	1°35'37				
max. Earth dist.	3503 Jun 11 02:00	20°II12'50	10.18244 AU	conjunction	3509 Sep 06 02:32	14°η08'00	1°19'24
morning rise	3503 Jun 28 20:54	22°II28'54		minimum elong	3509 Sep 06 02:29	14°η07'59	1°19'23
	3503 Sep 15 11:55	0°Ω		max. Earth dist.	3509 Sep 06 05:23	14°η08'55	10.18215 AU
retrograde	3503 Oct 13 07:44	0°Ω41'11		morning rise	3509 Sep 23 23:24	16°η24'28	
	3503 Nov 10 06:02	30°RII		retrograde	3510 Jan 04 14:39	24°η19'35	
opposition	3503 Dec 20 08:37	27°II11'57	-1°-44'-27	opposition	3510 Mar 12 06:39	20°η54'25	1°53'22
min. Earth dist.	3503 Dec 20 06:34	27°II12'22	8.15026 AU	min. Earth dist.	3510 Mar 12 04:09	20°η54'55	8.21879 AU
direct	3504 Feb 25 00:18	23°II45'45		direct	3510 May 19 11:33	17°η25'39	
	3504 May 23 14:20	0°Ω		evening set	3510 Sep 02 16:35	25°η31'54	
evening set	3504 Jun 06 16:46	1°Ω44'27					
conjunction	3504 Jun 24 14:30	4°Ω02'10	-1°-11'-12	conjunction	3510 Sep 20 12:43	27°η47'07	1°41'54
minimum elong	3504 Jun 24 14:33	4°Ω02'11	1°11'14	minimum elong	3510 Sep 20 12:40	27°η47'06	1°41'54
max. Earth dist.	3504 Jun 24 17:08	4°Ω03'01	10.12217 AU	max. Earth dist.	3510 Sep 20 15:00	27°η47'51	10.25777 AU
morning rise	3504 Jul 12 15:00	6°Ω20'49		morning rise	3510 Oct 08 05:02	0°Ω01'11	
retrograde	3504 Oct 26 18:34	14°Ω35'09			3510 Oct 08 01:15	0°Ω	
opposition	3505 Jan 02 08:08	11°Ω05'57	-1°-11'-12	retrograde	3511 Jan 18 03:10	7°Ω48'53	
min. Earth dist.	3505 Jan 02 05:43	11°Ω06'27	8.10059 AU	opposition	3511 Mar 25 22:27	4°Ω24'59	2°17'32
direct	3505 Mar 09 22:23	7°Ω38'48		min. Earth dist.	3511 Mar 25 20:46	4°Ω25'19	8.30128 AU
evening set	3505 Jun 21 09:56	15°Ω43'04		direct	3511 Jun 02 15:15	0°Ω56'43	
				evening set	3511 Sep 16 22:45	8°Ω58'17	
conjunction	3505 Jul 09 11:02	18°Ω02'23	0°-42'-23	conjunction	3511 Oct 04 14:37	11°Ω11'02	1°58'28
minimum elong	3505 Jul 09 11:04	18°Ω02'23	0°42'25	minimum elong	3511 Oct 04 14:35	11°Ω11'01	1°58'28
max. Earth dist.	3505 Jul 09 13:53	18°Ω03'18	10.08454 AU	max. Earth dist.	3511 Oct 04 16:04	11°Ω11'29	10.34557 AU
morning rise	3505 Jul 27 14:00	20°Ω22'16		morning rise	3511 Oct 22 02:12	13°Ω22'30	
retrograde	3505 Nov 10 05:53	28°Ω36'27		retrograde	3512 Jan 31 08:37	21°Ω02'37	
opposition	3506 Jan 16 09:23	25°Ω07'37	0°-33'-23	opposition	3512 Apr 07 09:59	17°Ω39'58	2°33'48
min. Earth dist.	3506 Jan 16 07:01	25°Ω08'07	8.07510 AU	min. Earth dist.	3512 Apr 07 09:25	17°Ω40'04	8.39405 AU
direct	3506 Mar 24 02:30	21°Ω39'39		direct	3512 Jun 15 14:40	14°Ω12'25	
evening set	3506 Jul 06 07:51	29°Ω48'05		evening set	3512 Sep 29 19:54	22°Ω08'01	
	3506 Jul 07 21:21	0°Ω					
conjunction	3506 Jul 24 10:58	2°Ω08'10	0°-10'-54	conjunction	3512 Oct 17 07:24	24°Ω18'12	2°08'30
minimum elong	3506 Jul 24 10:59	2°Ω08'11	0°10'56	minimum elong	3512 Oct 17 07:23	24°Ω18'12	2°08'30
behind sun begin	3506 Jul 24 05:30	2°Ω06'25		max. Earth dist.	3512 Oct 17 07:34	24°Ω18'15	10.44173 AU
behind sun end	3506 Jul 24 16:28	2°Ω09'56		morning rise	3512 Nov 03 14:31	26°Ω27'04	
max. Earth dist.	3506 Jul 24 13:45	2°Ω09'04	10.07198 AU		3512 Dec 04 14:59	0°ℳ	
morning rise	3506 Aug 11 14:50	4°Ω28'29		retrograde	3513 Feb 12 07:54	3°ℳ59'36	
retrograde	3506 Nov 24 14:22	12°Ω40'22		opposition	3513 Apr 20 16:51	0°ℳ38'07	2°41'47
asc. node	3506 Nov 29 17:40	12°Ω38'54		min. Earth dist.	3513 Apr 20 16:55	0°ℳ38'06	8.49290 AU
opposition	3507 Jan 30 11:16	9°Ω12'12	0°06'32		3513 Apr 28 19:55	30°RΩ	
min. Earth dist.	3507 Jan 30 08:59	9°Ω12'40	8.07540 AU	direct	3513 Jun 29 08:40	27°Ω11'28	
direct	3507 Apr 07 10:46	5°Ω43'39			3513 Aug 27 20:25	0°ℳ	
evening set	3507 Jul 21 07:48	13°Ω54'26		evening set	3513 Oct 13 07:31	5°ℳ00'07	
	3507 Jul 29 21:02	15°Ω					
conjunction	3507 Aug 08 11:18	16°Ω14'25	0°21'17	conjunction	3513 Oct 30 14:51	7°ℳ07'49	2°11'52
minimum elong	3507 Aug 08 11:17	16°Ω14'25	0°21'17	minimum elong	3513 Oct 30 14:51	7°ℳ07'49	2°11'52
				max. Earth dist.	3513 Oct 30 14:08	7°ℳ07'35	10.54182 AU
				morning rise	3513 Nov 16 17:54	9°ℳ14'11	



	3514 Jan 12 06:01	15°♈		retrograde	3520 May 06 14:37	27°♎48'06	
retrograde	3514 Feb 24 23:59	16°♈39'25		opposition	3520 Jul 15 19:58	24°♎29'54	0°35'11
	3514 Apr 11 01:20	15°♈♈		min. Earth dist.	3520 Jul 15 20:37	24°♎29'47	8.99801 AU
opposition	3514 May 03 18:50	13°♈18'59	2°41'39	direct	3520 Sep 24 18:12	21°♎10'01	
min. Earth dist.	3514 May 03 18:56	13°♈18'58	8.59319 AU	evening set	3521 Jan 04 08:10	28°♎15'15	
direct	3514 Jul 12 21:14	9°♈53'20			3521 Jan 19 04:38	0°♈	
	3514 Oct 04 00:02	15°♈					
evening set	3514 Oct 26 09:17	17°♈34'28		conjunction	3521 Jan 21 00:45	0°♈13'04	0°15'44
				minimum elong	3521 Jan 21 00:46	0°♈13'04	0°15'45
conjunction	3514 Nov 12 13:01	19°♈39'51	2°08'49	behind sun begin	3521 Jan 20 22:58	0°♈12'33	
minimum elong	3514 Nov 12 13:02	19°♈39'51	2°08'50	behind sun end	3521 Jan 21 02:33	0°♈13'35	
max. Earth dist.	3514 Nov 12 12:16	19°♈39'37	10.64118 AU	max. Earth dist.	3521 Jan 20 23:35	0°♈12'43	11.00500 AU
morning rise	3514 Nov 29 12:34	21°♈43'58		morning rise	3521 Feb 06 16:34	2°♈10'42	
retrograde	3515 Mar 09 10:53	29°♈02'33		retrograde	3521 May 18 13:46	9°♈13'31	
opposition	3515 May 16 16:10	25°♈42'58	2°33'55	opposition	3521 Jul 28 00:49	5°♈55'01	0°03'09
min. Earth dist.	3515 May 16 15:56	25°♈43'00	8.69031 AU	min. Earth dist.	3521 Jul 28 01:54	5°♈54'49	9.00709 AU
direct	3515 Jul 26 03:59	22°♈18'23		desc. node	3521 Sep 02 18:42	3°♈29'38	
evening set	3515 Nov 08 01:34	29°♈51'50		direct	3521 Oct 06 18:12	2°♈35'44	
	3515 Nov 09 05:00	0°♈♈		evening set	3522 Jan 15 19:06	9°♈38'51	
conjunction	3515 Nov 25 02:19	1°♈55'09	1°59'54	conjunction	3522 Feb 01 11:03	11°♈36'32	0°-10'-39
minimum elong	3515 Nov 25 02:21	1°♈55'10	1°59'54	minimum elong	3522 Feb 01 11:02	11°♈36'32	0°10'39
max. Earth dist.	3515 Nov 25 02:07	1°♈55'05	10.73523 AU	behind sun begin	3522 Feb 01 05:35	11°♈34'56	
morning rise	3515 Dec 11 23:01	3°♈57'18		behind sun end	3522 Feb 01 16:29	11°♈38'08	
retrograde	3516 Mar 20 18:28	11°♈10'07		max. Earth dist.	3522 Feb 01 09:00	11°♈35'57	11.00417 AU
opposition	3516 May 28 09:02	7°♈51'12	2°19'26	morning rise	3522 Feb 18 03:16	13°♈34'18	
min. Earth dist.	3516 May 28 09:17	7°♈51'09	8.77986 AU		3522 Mar 02 17:29	15°♈	
direct	3516 Aug 07 02:52	4°♈27'42		retrograde	3522 May 30 13:06	20°♈39'27	
evening set	3516 Nov 19 09:38	11°♈53'44		opposition	3522 Aug 09 05:58	17°♈20'26	0°-29'-1
				min. Earth dist.	3522 Aug 09 07:34	17°♈20'08	8.99631 AU
conjunction	3516 Dec 06 07:48	13°♈55'18	1°45'50		3522 Sep 13 08:50	15°♈♈	
minimum elong	3516 Dec 06 07:50	13°♈55'19	1°45'49	direct	3522 Oct 18 16:20	14°♈01'35	
max. Earth dist.	3516 Dec 06 07:09	13°♈55'06	10.81977 AU		3522 Nov 22 06:54	15°♈	
morning rise	3516 Dec 23 02:25	15°♈55'51		evening set	3523 Jan 27 06:33	21°♈04'00	
retrograde	3517 Apr 01 20:10	23°♈03'54					
opposition	3517 Jun 09 21:54	19°♈45'30	1°59'13	conjunction	3523 Feb 12 22:20	23°♈01'53	0°-36'-35
min. Earth dist.	3517 Jun 09 23:00	19°♈45'17	8.85813 AU	minimum elong	3523 Feb 12 22:19	23°♈01'53	0°36'36
direct	3517 Aug 19 18:58	16°♈23'00		max. Earth dist.	3523 Feb 12 20:21	23°♈01'18	10.98346 AU
evening set	3517 Dec 01 10:31	23°♈42'18		morning rise	3523 Mar 01 15:13	25°♈00'06	
					3523 Apr 20 06:18	0°♈♈	
conjunction	3517 Dec 18 06:32	25°♈42'25	1°27'28	retrograde	3523 Jun 11 16:15	2°♈09'00	
minimum elong	3517 Dec 18 06:35	25°♈42'26	1°27'27		3523 Aug 05 06:22	30°♈♈	
max. Earth dist.	3517 Dec 18 04:57	25°♈41'56	10.89147 AU	opposition	3523 Aug 21 12:00	28°♈49'15	-1°00'-12
morning rise	3518 Jan 03 23:50	27°♈41'44		min. Earth dist.	3523 Aug 21 13:12	28°♈49'01	8.96600 AU
	3518 Jan 24 11:22	0°♈♈		direct	3523 Oct 30 15:39	25°♈30'37	
retrograde	3518 Apr 13 18:46	4°♈46'20			3524 Jan 15 18:45	0°♈♈	
opposition	3518 Jun 22 07:36	1°♈28'12	1°34'21	evening set	3524 Feb 07 19:55	2°♈33'45	
min. Earth dist.	3518 Jun 22 09:05	1°♈27'56	8.92211 AU				
	3518 Jul 12 16:09	30°♈♈		conjunction	3524 Feb 24 12:02	4°♈32'12	-1°-1'-14
direct	3518 Sep 01 08:22	28°♈06'39		minimum elong	3524 Feb 24 12:00	4°♈32'11	1°01'16
	3518 Oct 20 10:28	0°♈♈		max. Earth dist.	3524 Feb 24 10:53	4°♈31'51	10.94354 AU
evening set	3518 Dec 13 05:22	5°♈20'06		morning rise	3524 Mar 12 05:47	6°♈31'09	
				retrograde	3524 Jun 23 00:42	13°♈45'05	
conjunction	3518 Dec 29 23:49	7°♈19'07	1°05'42	opposition	3524 Sep 01 20:09	10°♈24'28	-1°-29'-14
minimum elong	3518 Dec 29 23:51	7°♈19'07	1°05'42	min. Earth dist.	3524 Sep 01 20:36	10°♈24'23	8.91719 AU
max. Earth dist.	3518 Dec 29 21:57	7°♈18'33	10.94759 AU	direct	3524 Nov 10 13:53	7°♈05'53	
morning rise	3519 Jan 15 16:16	9°♈17'31		evening set	3525 Feb 18 12:43	14°♈11'05	
retrograde	3519 Apr 25 17:07	16°♈20'06					
opposition	3519 Jul 04 14:41	13°♈02'01	1°05'58	conjunction	3525 Mar 07 05:25	16°♈10'23	-1°-23'-37
min. Earth dist.	3519 Jul 04 15:35	13°♈01'51	8.96934 AU	minimum elong	3525 Mar 07 05:23	16°♈10'22	1°23'39
direct	3519 Sep 13 15:44	9°♈41'22		max. Earth dist.	3525 Mar 07 04:41	16°♈10'10	10.88589 AU
evening set	3519 Dec 24 20:03	16°♈50'03		morning rise	3525 Mar 24 00:28	18°♈10'26	
				retrograde	3525 Jul 05 13:15	25°♈30'32	
conjunction	3520 Jan 10 13:28	18°♈48'18	0°41'29	opposition	3525 Sep 14 07:16	22°♈08'54	-1°-54'-58
minimum elong	3520 Jan 10 13:30	18°♈48'18	0°41'29	min. Earth dist.	3525 Sep 14 07:30	22°♈08'51	8.85177 AU
max. Earth dist.	3520 Jan 10 12:20	18°♈47'58	10.98593 AU	direct	3525 Nov 22 14:01	18°♈50'09	
morning rise	3520 Jan 27 05:23	20°♈46'10		evening set	3526 Mar 02 10:23	25°♈58'44	



conjunction	3526 Mar 19 04:08	27° <del>✕</del> 59'14	-1°-42'-45	minimum elong	3532 Jun 03 22:15	14° <del>II</del> 19'19	1°44'34
minimum elong	3526 Mar 19 04:06	27° <del>✕</del> 59'14	1°42'47	max. Earth dist.	3532 Jun 03 21:41	14° <del>II</del> 19'07	10.24272 AU
max. Earth dist.	3526 Mar 19 02:51	27° <del>✕</del> 58'51	10.81288 AU	morning rise	3532 Jun 21 17:11	16° <del>II</del> 34'35	
	3526 Apr 04 22:42	0° <del>Y</del>		retrograde	3532 Oct 06 05:22	24° <del>II</del> 43'48	
morning rise	3526 Apr 05 01:08	0° <del>Y</del> 00'43		opposition	3532 Dec 13 11:54	21° <del>II</del> 15'16	-1°-57'-7
retrograde	3526 Jul 18 07:54	7° <del>Y</del> 27'52		min. Earth dist.	3532 Dec 13 11:52	21° <del>II</del> 15'17	8.20455 AU
opposition	3526 Sep 26 21:54	4° <del>Y</del> 05'08	-2°-16'-14	direct	3533 Feb 18 05:16	17° <del>II</del> 50'01	
min. Earth dist.	3526 Sep 26 22:34	4° <del>Y</del> 05'00	8.77239 AU	evening set	3533 May 31 12:47	25° <del>II</del> 44'25	
direct	3526 Dec 04 17:28	0° <del>Y</del> 45'58					
evening set	3527 Mar 14 13:57	7° <del>Y</del> 59'08		conjunction	3533 Jun 18 08:23	28° <del>II</del> 00'50	-1°-22'-43
				minimum elong	3533 Jun 18 08:26	28° <del>II</del> 00'51	1°22'44
conjunction	3527 Mar 31 09:32	10° <del>Y</del> 01'12	-1°-57'-43	max. Earth dist.	3533 Jun 18 08:47	28° <del>II</del> 00'58	10.16961 AU
minimum elong	3527 Mar 31 09:30	10° <del>Y</del> 01'11	1°57'44		3533 Jul 03 21:15	0° <del>☾</del>	
max. Earth dist.	3527 Mar 31 08:18	10° <del>Y</del> 00'49	10.72737 AU	morning rise	3533 Jul 06 07:20	0° <del>☾</del> 18'18	
morning rise	3527 Apr 17 08:58	12° <del>Y</del> 04'26		retrograde	3533 Oct 20 13:22	8° <del>☾</del> 30'36	
retrograde	3527 Jul 31 07:19	19° <del>Y</del> 39'13		opposition	3533 Dec 27 09:01	5° <del>☾</del> 01'45	-1°-26'-47
opposition	3527 Oct 09 16:36	16° <del>Y</del> 15'20	-2°-31'-53	min. Earth dist.	3533 Dec 27 08:20	5° <del>☾</del> 01'53	8.14067 AU
min. Earth dist.	3527 Oct 09 17:18	16° <del>Y</del> 15'12	8.68201 AU	direct	3534 Mar 04 00:50	1° <del>☾</del> 35'18	
direct	3527 Dec 17 01:01	12° <del>Y</del> 55'32		evening set	3534 Jun 15 01:47	9° <del>☾</del> 35'52	
evening set	3528 Mar 26 00:30	20° <del>Y</del> 14'19					
				conjunction	3534 Jul 03 01:24	11° <del>☾</del> 54'11	0°-55'-51
conjunction	3528 Apr 11 22:41	22° <del>Y</del> 18'17	-2°-7'-38	minimum elong	3534 Jul 03 01:26	11° <del>☾</del> 54'12	0°55'53
minimum elong	3528 Apr 11 22:40	22° <del>Y</del> 18'17	2°07'38	max. Earth dist.	3534 Jul 03 02:47	11° <del>☾</del> 54'38	10.11651 AU
max. Earth dist.	3528 Apr 11 22:21	22° <del>Y</del> 18'11	10.63251 AU	morning rise	3534 Jul 21 03:17	14° <del>☾</del> 13'17	
morning rise	3528 Apr 29 00:59	24° <del>Y</del> 23'33		retrograde	3534 Nov 03 23:07	22° <del>☾</del> 26'33	
	3528 Jun 22 07:48	0° <del>♄</del>		opposition	3535 Jan 10 08:20	18° <del>☾</del> 57'41	0°-50'-59
retrograde	3528 Aug 12 13:32	2° <del>♄</del> 06'17		min. Earth dist.	3535 Jan 10 06:53	18° <del>☾</del> 57'59	8.09868 AU
	3528 Oct 04 05:51	30° <del>♄</del>		direct	3535 Mar 18 01:38	15° <del>☾</del> 30'09	
opposition	3528 Oct 21 15:45	28° <del>Y</del> 41'12	-2°-40'-51	evening set	3535 Jun 29 20:27	23° <del>☾</del> 35'40	
min. Earth dist.	3528 Oct 21 15:52	28° <del>Y</del> 41'11	8.58402 AU				
direct	3528 Dec 28 14:45	25° <del>Y</del> 20'35		conjunction	3535 Jul 17 22:50	25° <del>☾</del> 55'13	0°-25'-30
	3529 Mar 14 22:11	0° <del>♄</del>		minimum elong	3535 Jul 17 22:51	25° <del>☾</del> 55'14	0°25'31
evening set	3529 Apr 07 18:59	2° <del>♄</del> 45'48		max. Earth dist.	3535 Jul 18 01:00	25° <del>☾</del> 55'55	10.08672 AU
				morning rise	3535 Aug 05 02:16	28° <del>☾</del> 15'10	
conjunction	3529 Apr 24 20:32	4° <del>♄</del> 52'01	-2°-11'-42		3535 Aug 19 04:53	0° <del>♄</del>	
minimum elong	3529 Apr 24 20:32	4° <del>♄</del> 52'01	2°11'42	retrograde	3535 Nov 18 07:51	6° <del>♄</del> 27'21	
max. Earth dist.	3529 Apr 24 20:46	4° <del>♄</del> 52'05	10.53200 AU	opposition	3536 Jan 24 08:58	2° <del>♄</del> 58'46	0°-11'-53
morning rise	3529 May 12 02:20	6° <del>♄</del> 59'36		min. Earth dist.	3536 Jan 24 06:55	2° <del>♄</del> 59'11	8.08120 AU
retrograde	3529 Aug 26 03:46	14° <del>♄</del> 50'10			3536 Mar 08 01:42	30° <del>♄</del>	
opposition	3529 Nov 03 19:42	11° <del>♄</del> 23'58	-2°-42'-16	direct	3536 Mar 31 06:41	29° <del>☾</del> 30'21	
min. Earth dist.	3529 Nov 03 19:18	11° <del>♄</del> 24'03	8.48218 AU		3536 Apr 23 10:02	0° <del>♄</del>	
direct	3530 Jan 10 08:18	8° <del>♄</del> 02'21		asc. node	3536 May 16 05:41	1° <del>♄</del> 22'44	
	3530 Apr 16 04:14	15° <del>♄</del>		evening set	3536 Jul 13 18:21	7° <del>♄</del> 39'13	
evening set	3530 Apr 20 22:03	15° <del>♄</del> 34'40					
				conjunction	3536 Jul 31 21:57	9° <del>♄</del> 59'11	0°06'32
conjunction	3530 May 08 03:36	17° <del>♄</del> 43'23	-2°-9'-21	minimum elong	3536 Jul 31 21:57	9° <del>♄</del> 59'11	0°06'32
minimum elong	3530 May 08 03:37	17° <del>♄</del> 43'23	2°09'21	behind sun begin	3536 Jul 31 15:04	9° <del>♄</del> 56'58	
max. Earth dist.	3530 May 08 03:25	17° <del>♄</del> 43'19	10.42987 AU	behind sun end	3536 Aug 01 04:50	10° <del>♄</del> 01'23	
morning rise	3530 May 25 13:35	19° <del>♄</del> 53'32		max. Earth dist.	3536 Aug 01 00:31	9° <del>♄</del> 59'59	10.08204 AU
retrograde	3530 Sep 09 00:34	27° <del>♄</del> 51'27		morning rise	3536 Aug 19 01:22	12° <del>♄</del> 19'07	
opposition	3530 Nov 17 04:35	24° <del>♄</del> 24'17	-2°-35'-30		3536 Sep 10 01:55	15° <del>♄</del>	
min. Earth dist.	3530 Nov 17 04:19	24° <del>♄</del> 24'20	8.38095 AU	retrograde	3536 Dec 01 14:03	20° <del>♄</del> 28'17	
direct	3531 Jan 23 07:13	21° <del>♄</del> 01'31		opposition	3537 Feb 06 09:31	17° <del>♄</del> 00'16	0°27'56
evening set	3531 May 04 10:13	28° <del>♄</del> 41'24		min. Earth dist.	3537 Feb 06 07:29	17° <del>♄</del> 00'41	8.08922 AU
	3531 May 14 21:22	0° <del>II</del>			3537 Mar 04 09:10	15° <del>♄</del>	
				direct	3537 Apr 14 13:49	13° <del>♄</del> 31'12	
conjunction	3531 May 21 20:17	0° <del>II</del> 52'46	-2°00'-16		3537 May 25 09:40	15° <del>♄</del>	
minimum elong	3531 May 21 20:19	0° <del>II</del> 52'46	2°00'17	evening set	3537 Jul 28 17:19	21° <del>♄</del> 41'40	
max. Earth dist.	3531 May 21 19:37	0° <del>II</del> 52'33	10.33135 AU				
morning rise	3531 Jun 08 10:47	3° <del>II</del> 05'32		conjunction	3537 Aug 15 20:26	24° <del>♄</del> 01'10	0°38'02
retrograde	3531 Sep 23 00:46	11° <del>II</del> 09'50		minimum elong	3537 Aug 15 20:25	24° <del>♄</del> 01'09	0°38'01
opposition	3531 Nov 30 18:05	7° <del>II</del> 41'53	-2°-20'-21	max. Earth dist.	3537 Aug 15 22:38	24° <del>♄</del> 01'52	10.10253 AU
min. Earth dist.	3531 Nov 30 18:06	7° <del>II</del> 41'53	8.28636 AU	morning rise	3537 Sep 02 22:15	26° <del>♄</del> 20'15	
direct	3532 Feb 05 15:09	4° <del>II</del> 17'53			3537 Oct 03 19:10	0° <del>♄</del>	
evening set	3532 May 17 07:20	12° <del>II</del> 05'17		retrograde	3537 Dec 15 16:30	4° <del>♄</del> 24'38	
				opposition	3538 Feb 20 08:39	0° <del>♄</del> 57'26	1°05'54
conjunction	3532 Jun 03 22:12	14° <del>II</del> 19'18	-1°-44'-32	min. Earth dist.	3538 Feb 20 07:10	0° <del>♄</del> 57'44	8.12200 AU



	3538 Mar 04 04:10	30°♈♌		direct	3544 Jul 19 06:46	16°♌42'27	
direct	3538 Apr 28 21:42	27°♌28'01		evening set	3544 Nov 01 11:50	24°♌19'26	
	3538 Jun 22 10:27	0°♐					
evening set	3538 Aug 12 14:20	5°♐38'11		conjunction	3544 Nov 18 13:54	26°♌23'40	2°04'44
				minimum elong	3544 Nov 18 13:55	26°♌23'40	2°04'45
conjunction	3538 Aug 30 15:25	7°♐56'25	1°07'07	max. Earth dist.	3544 Nov 18 13:34	26°♌23'34	10.69225 AU
minimum elong	3538 Aug 30 15:22	7°♐56'24	1°07'06	morning rise	3544 Dec 05 12:00	28°♌26'42	
max. Earth dist.	3538 Aug 30 16:56	7°♐56'54	10.14670 AU		3544 Dec 18 19:38	0°♐	
morning rise	3538 Sep 17 14:11	10°♐13'54		retrograde	3545 Mar 15 08:02	5°♐42'00	
retrograde	3538 Dec 29 13:51	18°♐12'10		opposition	3545 May 22 18:33	2°♐22'50	2°26'59
opposition	3539 Mar 06 05:26	14°♐45'59	1°39'37	min. Earth dist.	3545 May 22 18:41	2°♐22'48	8.74083 AU
min. Earth dist.	3539 Mar 06 04:13	14°♐46'14	8.17732 AU		3545 Jun 26 10:21	30°♈♌	
direct	3539 May 13 05:21	11°♐16'33		direct	3545 Aug 01 09:09	28°♌58'53	
evening set	3539 Aug 27 06:33	19°♐24'27			3545 Sep 05 20:41	0°♐	
				evening set	3545 Nov 13 23:46	6°♐28'22	
conjunction	3539 Sep 14 04:24	21°♐40'46	1°32'02				
minimum elong	3539 Sep 14 04:21	21°♐40'45	1°32'01	conjunction	3545 Nov 30 23:00	8°♐30'41	1°53'00
max. Earth dist.	3539 Sep 14 05:34	21°♐41'09	10.21171 AU	minimum elong	3545 Nov 30 23:02	8°♐30'42	1°53'00
morning rise	3539 Oct 01 23:08	23°♐56'05		max. Earth dist.	3545 Nov 30 22:25	8°♐30'31	10.78486 AU
	3539 Nov 28 08:07	0°♑		morning rise	3545 Dec 17 18:41	10°♐31'57	
retrograde	3540 Jan 12 03:39	1°♑47'20		retrograde	3546 Mar 27 12:00	17°♐42'03	
	3540 Feb 26 23:02	30°♈♌		opposition	3546 Jun 04 09:18	14°♐23'38	2°09'19
opposition	3540 Mar 18 22:47	28°♐22'18	2°07'08	min. Earth dist.	3546 Jun 04 09:05	14°♐23'41	8.82790 AU
min. Earth dist.	3540 Mar 18 21:25	28°♐22'35	8.25165 AU	direct	3546 Aug 14 05:24	11°♐00'57	
direct	3540 May 26 11:37	24°♐53'12		evening set	3546 Nov 26 04:00	18°♐23'22	
	3540 Aug 15 17:16	0°♑					
evening set	3540 Sep 09 16:05	2°♑57'06		conjunction	3546 Dec 13 01:04	20°♐24'06	1°36'32
				minimum elong	3546 Dec 13 01:06	20°♐24'07	1°36'32
conjunction	3540 Sep 27 10:01	5°♑11'05	1°51'28	max. Earth dist.	3546 Dec 13 00:59	20°♐24'04	10.86599 AU
minimum elong	3540 Sep 27 09:58	5°♑11'04	1°51'27	morning rise	3546 Dec 29 18:54	22°♐23'56	
max. Earth dist.	3540 Sep 27 11:06	5°♑11'26	10.29365 AU	retrograde	3547 Apr 08 14:23	29°♐30'01	
morning rise	3540 Oct 15 00:07	7°♑23'52		opposition	3547 Jun 16 20:34	26°♐12'09	1°46'29
retrograde	3541 Jan 24 11:39	15°♑07'34		min. Earth dist.	3547 Jun 16 20:28	26°♐12'10	8.90174 AU
opposition	3541 Apr 01 11:50	11°♑43'45	2°27'11	direct	3547 Aug 26 20:07	22°♐50'37	
min. Earth dist.	3541 Apr 01 10:06	11°♑44'05	8.34054 AU		3547 Dec 07 02:49	0°♑	
direct	3541 Jun 09 12:47	8°♑15'17		evening set	3547 Dec 08 01:51	0°♑06'43	
evening set	3541 Sep 23 17:17	16°♑13'43					
				conjunction	3547 Dec 24 21:09	2°♑06'11	1°16'15
conjunction	3541 Oct 11 07:00	18°♑25'10	2°04'35	minimum elong	3547 Dec 24 21:11	2°♑06'12	1°16'14
minimum elong	3541 Oct 11 06:58	18°♑25'10	2°04'35	max. Earth dist.	3547 Dec 24 20:51	2°♑06'06	10.93225 AU
max. Earth dist.	3541 Oct 11 08:25	18°♑25'37	10.38776 AU	morning rise	3548 Jan 10 13:50	4°♑04'56	
morning rise	3541 Oct 28 16:18	20°♑35'17		retrograde	3548 Apr 19 13:22	11°♑08'15	
retrograde	3542 Feb 06 14:30	28°♑11'17		opposition	3548 Jun 28 05:03	7°♑50'42	1°19'36
opposition	3542 Apr 14 20:32	24°♑48'44	2°39'03	min. Earth dist.	3548 Jun 28 05:57	7°♑50'32	8.95920 AU
min. Earth dist.	3542 Apr 14 18:55	24°♑49'03	8.43898 AU	direct	3548 Sep 07 04:10	4°♑30'11	
direct	3542 Jun 23 08:03	21°♑21'12		evening set	3548 Dec 18 18:51	11°♑40'59	
evening set	3542 Oct 07 09:00	29°♑13'01					
	3542 Oct 13 18:19	0°♌		conjunction	3549 Jan 04 12:39	13°♑39'30	0°53'04
				minimum elong	3549 Jan 04 12:40	13°♑39'31	0°53'04
conjunction	3542 Oct 24 18:28	1°♌21'54	2°11'04	max. Earth dist.	3549 Jan 04 10:56	13°♑39'00	10.98071 AU
minimum elong	3542 Oct 24 18:28	1°♌21'54	2°11'05	morning rise	3549 Jan 21 04:45	15°♑37'32	
max. Earth dist.	3542 Oct 24 19:59	1°♌22'23	10.48893 AU	retrograde	3549 May 01 09:48	22°♑39'32	
morning rise	3542 Nov 10 23:19	3°♌29'26		opposition	3549 Jul 10 11:29	19°♑22'00	0°49'49
retrograde	3543 Feb 19 10:35	10°♌57'56		min. Earth dist.	3549 Jul 10 13:11	19°♑21'41	8.99768 AU
opposition	3543 Apr 28 00:34	7°♌36'38	2°42'41	direct	3549 Sep 19 09:39	16°♑02'18	
min. Earth dist.	3543 Apr 27 23:37	7°♌36'49	8.54183 AU	evening set	3549 Dec 30 08:23	23°♑09'03	
direct	3543 Jul 06 21:47	4°♌10'12					
evening set	3543 Oct 20 15:08	11°♌54'44		conjunction	3550 Jan 16 01:10	25°♑06'58	0°27'55
				minimum elong	3550 Jan 16 01:11	25°♑06'58	0°27'56
conjunction	3543 Nov 06 20:38	14°♌01'11	2°10'59	max. Earth dist.	3550 Jan 15 22:48	25°♑06'16	11.00903 AU
minimum elong	3543 Nov 06 20:39	14°♌01'11	2°11'00	morning rise	3550 Feb 01 17:05	27°♑04'37	
max. Earth dist.	3543 Nov 06 21:25	14°♌01'25	10.59207 AU		3550 Feb 28 10:31	0°♌	
	3543 Nov 14 19:51	15°♌		retrograde	3550 May 13 08:49	4°♌06'50	
morning rise	3543 Nov 23 21:43	16°♌06'20		opposition	3550 Jul 22 16:47	0°♌49'03	0°18'14
retrograde	3544 Mar 02 23:31	23°♌27'49		min. Earth dist.	3550 Jul 22 18:30	0°♌48'44	9.01511 AU
opposition	3544 May 09 23:45	20°♌07'41	2°38'25		3550 Aug 02 21:05	30°♈♌	
min. Earth dist.	3544 May 09 23:41	20°♌07'42	8.64406 AU	direct	3550 Oct 01 12:46	27°♑30'00	



	3550 Nov 27 06:02	0°♊		retrograde	3556 Jul 24 16:27	14°♊16'00	
evening set	3551 Jan 10 19:54	4°♊34'01		opposition	3556 Oct 03 03:27	10°♊52'11	-2°-25'-27
				min. Earth dist.	3556 Oct 03 04:15	10°♊52'01	8.70857 AU
conjunction	3551 Jan 27 12:10	6°♊31'43	0°01'47	direct	3556 Dec 10 17:16	7°♊32'11	
minimum elong	3551 Jan 27 12:10	6°♊31'43	0°01'47	evening set	3557 Mar 20 15:16	14°♊48'50	
behind sun begin	3551 Jan 27 05:12	6°♊29'40					
behind sun end	3551 Jan 27 19:09	6°♊33'45		conjunction	3557 Apr 06 12:10	16°♊52'04	-2°-3'-44
max. Earth dist.	3551 Jan 27 10:03	6°♊31'08	11.01557 AU	minimum elong	3557 Apr 06 12:09	16°♊52'04	2°03'44
morning rise	3551 Feb 13 04:07	8°♊29'21		max. Earth dist.	3557 Apr 06 10:30	16°♊51'34	10.65895 AU
desc. node	3551 Feb 21 04:14	9°♊24'16		morning rise	3557 Apr 23 13:04	18°♊56'33	
	3551 Apr 29 05:40	15°♊		retrograde	3557 Aug 06 19:44	26°♊36'15	
retrograde	3551 May 25 08:25	15°♊33'20		opposition	3557 Oct 16 00:55	23°♊11'07	-2°-37'-41
	3551 Jun 20 20:26	15°♊		min. Earth dist.	3557 Oct 16 01:43	23°♊10'57	8.60996 AU
opposition	3551 Aug 03 21:53	12°♊15'03	0°-14'00	direct	3557 Dec 23 04:09	19°♊50'15	
min. Earth dist.	3551 Aug 03 23:22	12°♊14'47	9.01063 AU	evening set	3558 Apr 02 06:12	27°♊13'06	
direct	3551 Oct 13 11:41	8°♊56'27					
	3552 Jan 13 16:19	15°♊		conjunction	3558 Apr 19 06:02	29°♊18'28	-2°-10'-37
evening set	3552 Jan 22 07:26	15°♊59'15		minimum elong	3558 Apr 19 06:02	29°♊18'28	2°10'37
				max. Earth dist.	3558 Apr 19 04:21	29°♊17'57	10.55760 AU
conjunction	3552 Feb 07 23:23	17°♊57'01	0°-24'-32		3558 Apr 24 20:18	0°♊	
minimum elong	3552 Feb 07 23:22	17°♊57'01	0°24'33	morning rise	3558 May 06 10:22	1°♊25'12	
max. Earth dist.	3552 Feb 07 21:01	17°♊56'19	11.00031 AU	retrograde	3558 Aug 20 06:06	9°♊12'56	
morning rise	3552 Feb 24 15:45	19°♊54'58		opposition	3558 Oct 29 02:57	5°♊46'34	-2°-42'-44
retrograde	3552 Jun 05 11:14	27°♊02'10		min. Earth dist.	3558 Oct 29 03:52	5°♊46'23	8.50723 AU
opposition	3552 Aug 15 03:45	23°♊43'09	0°-45'-48	direct	3559 Jan 04 20:03	2°♊24'42	
min. Earth dist.	3552 Aug 15 05:45	23°♊42'47	8.98498 AU	evening set	3559 Apr 15 05:26	9°♊54'29	
direct	3552 Oct 24 10:21	20°♊24'44					
evening set	3553 Feb 01 20:18	27°♊27'41		conjunction	3559 May 02 09:05	12°♊02'16	-2°-11'-17
				minimum elong	3559 May 02 09:06	12°♊02'16	2°11'18
conjunction	3553 Feb 18 12:07	29°♊25'53	0°-49'-56	max. Earth dist.	3559 May 02 08:23	12°♊02'03	10.45449 AU
minimum elong	3553 Feb 18 12:06	29°♊25'52	0°49'57	morning rise	3559 May 19 17:18	14°♊11'29	
max. Earth dist.	3553 Feb 18 08:51	29°♊24'54	10.96456 AU		3559 May 26 09:25	15°♊	
	3553 Feb 23 06:49	0°♊		retrograde	3559 Sep 02 22:54	22°♊06'53	
morning rise	3553 Mar 07 05:25	1°♊24'30		opposition	3559 Nov 11 09:55	18°♊39'26	-2°-39'-48
retrograde	3553 Jun 17 16:50	8°♊36'13		min. Earth dist.	3559 Nov 11 10:09	18°♊39'23	8.40505 AU
opposition	3553 Aug 27 11:27	5°♊16'14	-1°-16'00	direct	3560 Jan 17 18:00	15°♊16'29	
min. Earth dist.	3553 Aug 27 13:57	5°♊15'46	8.93974 AU	evening set	3560 Apr 27 13:27	22°♊53'38	
direct	3553 Nov 05 08:27	1°♊57'44					
evening set	3554 Feb 13 11:37	9°♊02'12		conjunction	3560 May 14 21:32	25°♊04'01	-2°-5'-19
				minimum elong	3560 May 14 21:34	25°♊04'02	2°05'20
conjunction	3554 Mar 02 03:53	11°♊01'08	-1°-13'-31	max. Earth dist.	3560 May 14 22:05	25°♊04'12	10.35456 AU
minimum elong	3554 Mar 02 03:51	11°♊01'07	1°13'32	morning rise	3560 Jun 01 09:58	27°♊15'49	
max. Earth dist.	3554 Mar 02 00:39	11°♊00'09	10.91005 AU		3560 Jun 24 12:30	0°♊	
morning rise	3554 Mar 18 22:25	13°♊00'44		retrograde	3560 Sep 15 21:21	5°♊18'07	
retrograde	3554 Jun 30 01:43	20°♊18'13		opposition	3560 Nov 23 21:43	1°♊49'46	-2°-28'-28
opposition	3554 Sep 08 21:31	16°♊57'01	-1°-43'-28	min. Earth dist.	3560 Nov 23 20:55	1°♊49'56	8.30858 AU
min. Earth dist.	3554 Sep 08 23:49	16°♊56'35	8.87687 AU		3560 Dec 18 01:02	30°♊	
direct	3554 Nov 17 09:50	13°♊38'13		direct	3561 Jan 29 22:46	28°♊25'43	
evening set	3555 Feb 25 07:06	20°♊45'32			3561 Mar 12 20:49	0°♊	
				evening set	3561 May 11 06:42	6°♊10'19	
conjunction	3555 Mar 14 00:25	22°♊45'34	-1°-34'-18				
minimum elong	3555 Mar 14 00:22	22°♊45'33	1°34'19	conjunction	3561 May 28 19:33	8°♊23'22	-1°-52'-36
max. Earth dist.	3555 Mar 13 22:19	22°♊44'56	10.83896 AU	minimum elong	3561 May 28 19:36	8°♊23'23	1°52'37
morning rise	3555 Mar 30 20:28	24°♊46'27		max. Earth dist.	3561 May 28 21:01	8°♊23'50	10.26317 AU
	3555 May 21 02:08	0°♊		morning rise	3561 Jun 15 12:26	10°♊37'44	
retrograde	3555 Jul 12 18:08	2°♊10'40		retrograde	3561 Sep 30 01:53	18°♊45'37	
	3555 Sep 05 06:02	30°♊		opposition	3561 Dec 07 13:55	15°♊16'40	-2°-8'-49
opposition	3555 Sep 21 10:27	28°♊48'11	-2°-7'00	min. Earth dist.	3561 Dec 07 12:20	15°♊16'59	8.22317 AU
min. Earth dist.	3555 Sep 21 11:47	28°♊47'56	8.79879 AU	direct	3562 Feb 12 08:37	11°♊51'29	
direct	3555 Nov 29 12:56	25°♊28'52		evening set	3562 May 25 08:49	19°♊43'19	
	3556 Feb 13 17:30	0°♊					
evening set	3556 Mar 08 07:58	2°♊40'18		conjunction	3562 Jun 12 02:25	21°♊58'52	-1°-33'-26
				minimum elong	3562 Jun 12 02:29	21°♊58'53	1°33'28
conjunction	3556 Mar 25 02:48	4°♊41'46	-1°-51'-21	max. Earth dist.	3562 Jun 12 04:06	21°♊59'24	10.18552 AU
minimum elong	3556 Mar 25 02:45	4°♊41'45	1°51'22	morning rise	3562 Jun 29 23:36	24°♊15'35	
max. Earth dist.	3556 Mar 25 01:14	4°♊41'17	10.75408 AU		3562 Aug 21 10:32	0°♊	
morning rise	3556 Apr 11 00:54	6°♊44'17		retrograde	3562 Oct 14 10:17	2°♊27'21	



	3562 Dec 08 13:49	30° $\mathbb{R}$ II		max. Earth dist.	3568 Sep 07 05:25	15° $\mathbb{M}$ 49'30	10.18767 AU
opposition	3562 Dec 21 10:01	28° $\mathbb{I}$ 58'07	-1°-41'-31	morning rise	3568 Sep 24 22:42	18° $\mathbb{M}$ 04'46	
min. Earth dist.	3562 Dec 21 08:15	28° $\mathbb{I}$ 58'29	8.15386 AU	retrograde	3569 Jan 05 13:26	25° $\mathbb{M}$ 59'26	
direct	3563 Feb 26 01:04	25° $\mathbb{I}$ 31'51		opposition	3569 Mar 13 05:29	22° $\mathbb{M}$ 34'21	1°55'32
	3563 May 10 07:19	0° $\mathbb{E}$		min. Earth dist.	3569 Mar 13 03:18	22° $\mathbb{M}$ 34'48	8.22458 AU
evening set	3563 Jun 08 18:56	3° $\mathbb{E}$ 30'16		direct	3569 May 20 11:07	19° $\mathbb{M}$ 05'38	
				evening set	3569 Sep 03 16:02	27° $\mathbb{M}$ 11'33	
conjunction	3563 Jun 26 16:45	5° $\mathbb{E}$ 47'57	-1°-8'-41				
minimum elong	3563 Jun 26 16:48	5° $\mathbb{E}$ 47'58	1°08'42	conjunction	3569 Sep 21 11:51	29° $\mathbb{M}$ 26'36	1°43'24
max. Earth dist.	3563 Jun 26 18:26	5° $\mathbb{E}$ 48'29	10.12628 AU	minimum elong	3569 Sep 21 11:48	29° $\mathbb{M}$ 26'35	1°43'23
morning rise	3563 Jul 14 17:27	8° $\mathbb{E}$ 06'33		max. Earth dist.	3569 Sep 21 13:48	29° $\mathbb{M}$ 27'13	10.26377 AU
retrograde	3563 Oct 28 20:13	16° $\mathbb{E}$ 20'14			3569 Sep 25 20:58	0° $\mathbb{E}$	
opposition	3564 Jan 04 09:02	12° $\mathbb{E}$ 51'05	-1°-7'-53	morning rise	3569 Oct 09 03:55	1° $\mathbb{E}$ 40'30	
min. Earth dist.	3564 Jan 04 07:19	12° $\mathbb{E}$ 51'26	8.10508 AU	retrograde	3570 Jan 19 00:58	9° $\mathbb{E}$ 27'42	
direct	3564 Mar 11 00:13	9° $\mathbb{E}$ 23'51		opposition	3570 Mar 26 20:55	6° $\mathbb{E}$ 03'53	2°19'02
evening set	3564 Jun 22 11:39	17° $\mathbb{E}$ 27'50		min. Earth dist.	3570 Mar 26 20:01	6° $\mathbb{E}$ 04'03	8.30740 AU
				direct	3570 Jun 03 14:20	2° $\mathbb{E}$ 35'38	
conjunction	3564 Jul 10 12:48	19° $\mathbb{E}$ 47'02	0°-39'-39	evening set	3570 Sep 17 21:38	10° $\mathbb{E}$ 36'48	
minimum elong	3564 Jul 10 12:49	19° $\mathbb{E}$ 47'03	0°39'41				
max. Earth dist.	3564 Jul 10 14:50	19° $\mathbb{E}$ 47'41	10.08938 AU	conjunction	3570 Oct 05 13:10	12° $\mathbb{E}$ 49'23	1°59'24
morning rise	3564 Jul 28 15:51	22° $\mathbb{E}$ 06'50		minimum elong	3570 Oct 05 13:08	12° $\mathbb{E}$ 49'23	1°59'24
	3564 Oct 22 23:08	0° $\mathbb{Q}$		max. Earth dist.	3570 Oct 05 13:31	12° $\mathbb{E}$ 49'30	10.35146 AU
retrograde	3564 Nov 11 05:16	0° $\mathbb{Q}$ 20'22		morning rise	3570 Oct 23 00:36	15° $\mathbb{E}$ 00'42	
	3564 Nov 30 11:44	30° $\mathbb{R}$ $\mathbb{E}$		retrograde	3571 Feb 01 06:22	22° $\mathbb{E}$ 40'22	
opposition	3565 Jan 17 09:49	26° $\mathbb{E}$ 51'35	0°-29'-55	opposition	3571 Apr 09 08:09	19° $\mathbb{E}$ 17'47	2°34'35
min. Earth dist.	3565 Jan 17 07:55	26° $\mathbb{E}$ 51'59	8.08018 AU	min. Earth dist.	3571 Apr 09 08:04	19° $\mathbb{E}$ 17'48	8.39955 AU
direct	3565 Mar 25 04:48	23° $\mathbb{E}$ 23'35		direct	3571 Jun 17 13:17	15° $\mathbb{E}$ 50'17	
	3565 Jun 25 02:10	0° $\mathbb{Q}$		evening set	3571 Oct 01 18:08	23° $\mathbb{E}$ 45'30	
evening set	3565 Jul 07 08:59	1° $\mathbb{Q}$ 31'40					
conjunction	3565 Jul 25 12:09	3° $\mathbb{Q}$ 51'39	0°-8'-8	conjunction	3571 Oct 19 05:22	25° $\mathbb{E}$ 55'34	2°08'51
minimum elong	3565 Jul 25 12:09	3° $\mathbb{Q}$ 51'39	0°08'10	minimum elong	3571 Oct 19 05:20	25° $\mathbb{E}$ 55'34	2°08'51
behind sun begin	3565 Jul 25 05:40	3° $\mathbb{Q}$ 49'35		max. Earth dist.	3571 Oct 19 04:41	25° $\mathbb{E}$ 55'22	10.44654 AU
behind sun end	3565 Jul 25 18:39	3° $\mathbb{Q}$ 53'44		morning rise	3571 Nov 05 12:21	28° $\mathbb{E}$ 04'19	
max. Earth dist.	3565 Jul 25 14:40	3° $\mathbb{Q}$ 52'27	10.07725 AU		3571 Nov 21 17:28	0° $\mathbb{M}$	
morning rise	3565 Aug 12 16:00	6° $\mathbb{Q}$ 11'50		retrograde	3572 Feb 14 04:48	5° $\mathbb{M}$ 36'33	
asc. node	3565 Oct 29 06:43	13° $\mathbb{Q}$ 42'15		opposition	3572 Apr 21 14:45	2° $\mathbb{M}$ 15'07	2°41'52
retrograde	3565 Nov 25 12:56	14° $\mathbb{Q}$ 23'08		min. Earth dist.	3572 Apr 21 14:41	2° $\mathbb{M}$ 15'08	8.49691 AU
opposition	3566 Jan 31 11:07	10° $\mathbb{Q}$ 55'01	0°09'57		3572 May 22 23:40	30° $\mathbb{R}$ $\mathbb{E}$	
min. Earth dist.	3566 Jan 31 08:47	10° $\mathbb{Q}$ 55'29	8.08074 AU	direct	3572 Jun 30 07:31	28° $\mathbb{E}$ 48'32	
direct	3566 Apr 08 11:40	7° $\mathbb{Q}$ 26'27			3572 Aug 07 05:40	0° $\mathbb{M}$	
	3566 Jul 17 11:10	15° $\mathbb{Q}$		evening set	3572 Oct 14 05:16	6° $\mathbb{M}$ 36'55	
evening set	3566 Jul 22 08:33	15° $\mathbb{Q}$ 36'54					
conjunction	3566 Aug 09 12:05	17° $\mathbb{Q}$ 56'47	0°23'57	conjunction	3572 Oct 31 12:32	8° $\mathbb{M}$ 44'32	2°11'38
minimum elong	3566 Aug 09 12:03	17° $\mathbb{Q}$ 56'47	0°23'56	minimum elong	3572 Oct 31 12:32	8° $\mathbb{M}$ 44'32	2°11'39
max. Earth dist.	3566 Aug 09 15:10	17° $\mathbb{Q}$ 57'47	10.09056 AU	max. Earth dist.	3572 Oct 31 11:47	8° $\mathbb{M}$ 44'18	10.54491 AU
morning rise	3566 Aug 27 14:54	20° $\mathbb{Q}$ 16'26		morning rise	3572 Nov 17 15:25	10° $\mathbb{M}$ 50'50	
retrograde	3566 Dec 09 18:15	28° $\mathbb{Q}$ 23'37			3572 Dec 25 03:33	15° $\mathbb{M}$	
opposition	3567 Feb 14 11:36	24° $\mathbb{Q}$ 56'22	0°49'07	retrograde	3573 Feb 25 21:18	18° $\mathbb{M}$ 15'58	
min. Earth dist.	3567 Feb 14 08:38	24° $\mathbb{Q}$ 56'59	8.10662 AU		3573 May 03 17:42	15° $\mathbb{R}$ $\mathbb{M}$	
direct	3567 Apr 22 19:55	21° $\mathbb{Q}$ 27'31		opposition	3573 May 04 16:36	14° $\mathbb{M}$ 55'33	2°41'02
evening set	3567 Aug 06 07:23	29° $\mathbb{Q}$ 38'22		min. Earth dist.	3573 May 04 16:30	14° $\mathbb{M}$ 55'35	8.59523 AU
	3567 Aug 09 03:47	0° $\mathbb{M}$		direct	3573 Jul 13 20:07	11° $\mathbb{M}$ 29'59	
					3573 Sep 19 04:22	15° $\mathbb{M}$	
conjunction	3567 Aug 24 09:39	1° $\mathbb{M}$ 57'17	0°54'23	evening set	3573 Oct 27 06:51	19° $\mathbb{M}$ 10'59	
minimum elong	3567 Aug 24 09:36	1° $\mathbb{M}$ 57'16	0°54'23				
max. Earth dist.	3567 Aug 24 13:14	1° $\mathbb{M}$ 58'26	10.12833 AU	conjunction	3573 Nov 13 10:35	21° $\mathbb{M}$ 16'20	2°08'03
morning rise	3567 Sep 11 09:54	4° $\mathbb{M}$ 15'36		minimum elong	3573 Nov 13 10:36	21° $\mathbb{M}$ 16'20	2°08'03
retrograde	3567 Dec 23 19:08	12° $\mathbb{M}$ 17'06		max. Earth dist.	3573 Nov 13 10:07	21° $\mathbb{M}$ 16'11	10.64216 AU
opposition	3568 Feb 28 10:06	8° $\mathbb{M}$ 50'52	1°25'02	morning rise	3573 Nov 30 09:56	23° $\mathbb{M}$ 20'24	
min. Earth dist.	3568 Feb 28 07:06	8° $\mathbb{M}$ 51'29	8.15590 AU		3574 Feb 11 02:48	0° $\mathbb{Z}$	
direct	3568 May 06 04:02	5° $\mathbb{M}$ 21'58		retrograde	3574 Mar 10 10:03	0° $\mathbb{Z}$ 39'03	
evening set	3568 Aug 20 02:35	13° $\mathbb{M}$ 31'13			3574 Apr 07 01:12	30° $\mathbb{R}$ $\mathbb{M}$	
				opposition	3574 May 17 14:06	27° $\mathbb{M}$ 19'30	2°32'40
conjunction	3568 Sep 07 02:10	15° $\mathbb{M}$ 48'27	1°21'23	min. Earth dist.	3574 May 17 14:21	27° $\mathbb{M}$ 19'27	8.69015 AU
minimum elong	3568 Sep 07 02:07	15° $\mathbb{M}$ 48'26	1°21'23	direct	3574 Jul 27 00:45	23° $\mathbb{M}$ 54'59	
					3574 Oct 27 07:29	0° $\mathbb{Z}$	
				evening set	3574 Nov 08 23:10	1° $\mathbb{Z}$ 28'25	



conjunction	3574 Nov 25 23:49	3°♊31'46	1°58'37	conjunction	3581 Feb 02 10:47	13°♊18'49	0°-13'-24
minimum elong	3574 Nov 25 23:51	3°♊31'46	1°58'38	minimum elong	3581 Feb 02 10:47	13°♊18'48	0°13'25
max. Earth dist.	3574 Nov 25 23:12	3°♊31'34	10.73400 AU	behind sun begin	3581 Feb 02 06:42	13°♊17'37	
morning rise	3574 Dec 12 20:28	5°♊33'57		behind sun end	3581 Feb 02 14:52	13°♊20'00	
retrograde	3575 Mar 22 16:07	12°♊46'55		max. Earth dist.	3581 Feb 02 08:42	13°♊18'12	10.99356 AU
opposition	3575 May 30 07:19	9°♊28'03	2°17'36		3581 Feb 16 17:39	15°♊	
min. Earth dist.	3575 May 30 08:30	9°♊27'49	8.77759 AU	morning rise	3581 Feb 19 03:09	15°♊16'44	
direct	3575 Aug 08 23:53	6°♊04'34		retrograde	3581 May 31 14:04	22°♊22'40	
evening set	3575 Nov 21 07:20	13°♊30'45		opposition	3581 Aug 10 07:00	19°♊03'29	0°-32'-22
				min. Earth dist.	3581 Aug 10 08:12	19°♊03'16	8.98543 AU
conjunction	3575 Dec 08 05:24	15°♊32'21	1°44'06	direct	3581 Oct 19 17:56	15°♊44'32	
minimum elong	3575 Dec 08 05:26	15°♊32'21	1°44'06	evening set	3582 Jan 28 06:47	22°♊47'31	
max. Earth dist.	3575 Dec 08 03:42	15°♊31'50	10.81649 AU				
morning rise	3575 Dec 25 00:09	17°♊32'59		conjunction	3582 Feb 13 22:43	24°♊45'34	0°-39'-16
retrograde	3576 Apr 02 17:54	24°♊41'22		minimum elong	3582 Feb 13 22:42	24°♊45'34	0°39'17
opposition	3576 Jun 10 20:28	21°♊22'57	1°56'53	max. Earth dist.	3582 Feb 13 21:39	24°♊45'15	10.97235 AU
min. Earth dist.	3576 Jun 10 22:00	21°♊22'39	8.85385 AU	morning rise	3582 Mar 02 15:35	26°♊43'56	
direct	3576 Aug 20 18:32	18°♊00'27			3582 Apr 01 16:55	0°♋	
evening set	3576 Dec 02 08:24	25°♊20'00		retrograde	3582 Jun 12 19:07	3°♋53'39	
				opposition	3582 Aug 22 13:39	0°♋33'44	-1°-3'-23
conjunction	3576 Dec 19 04:27	27°♊20'12	1°25'21	min. Earth dist.	3582 Aug 22 13:59	0°♋33'40	8.95481 AU
minimum elong	3576 Dec 19 04:30	27°♊20'12	1°25'21		3582 Aug 30 04:03	30°♋	
max. Earth dist.	3576 Dec 19 02:27	27°♊19'36	10.88625 AU	direct	3582 Oct 31 16:08	27°♋15'03	
morning rise	3577 Jan 04 21:52	29°♊19'37			3582 Dec 29 15:55	0°♋	
	3577 Jan 10 16:52	0°♋		evening set	3583 Feb 08 20:45	4°♋18'44	
retrograde	3577 Apr 14 17:59	6°♋24'40					
opposition	3577 Jun 23 06:31	3°♋06'28	1°31'35	conjunction	3583 Feb 25 12:55	6°♋17'20	-1°-3'-43
min. Earth dist.	3577 Jun 23 07:37	3°♋06'16	8.91590 AU	minimum elong	3583 Feb 25 12:53	6°♋17'19	1°03'44
	3577 Aug 15 14:12	30°♋		max. Earth dist.	3583 Feb 25 12:15	6°♋17'08	10.93230 AU
direct	3577 Sep 02 06:56	29°♋44'56		morning rise	3583 Mar 14 06:44	8°♋16'28	
	3577 Sep 19 19:59	0°♋		retrograde	3583 Jun 25 03:15	15°♋31'13	
evening set	3577 Dec 14 03:36	6°♋58'40		opposition	3583 Sep 03 22:21	12°♋10'26	-1°-32'-6
				min. Earth dist.	3583 Sep 03 22:32	12°♋10'24	8.90607 AU
conjunction	3577 Dec 30 22:12	8°♋57'48	1°03'17	direct	3583 Nov 12 14:41	8°♋51'46	
minimum elong	3577 Dec 30 22:14	8°♋57'49	1°03'17	evening set	3584 Feb 20 14:16	15°♋57'34	
max. Earth dist.	3577 Dec 30 20:57	8°♋57'26	10.94051 AU				
morning rise	3578 Jan 16 14:37	10°♋56'20		conjunction	3584 Mar 08 06:57	17°♋57'02	-1°-25'-46
retrograde	3578 Apr 26 16:36	17°♋59'28		minimum elong	3584 Mar 08 06:55	17°♋57'01	1°25'48
opposition	3578 Jul 05 14:09	14°♋41'18	1°02'52	max. Earth dist.	3584 Mar 08 05:45	17°♋56'40	10.87493 AU
min. Earth dist.	3578 Jul 05 14:46	14°♋41'11	8.96139 AU	morning rise	3584 Mar 25 02:13	19°♋57'15	
direct	3578 Sep 14 14:27	11°♋20'37		retrograde	3584 Jul 06 16:32	27°♋18'08	
evening set	3578 Dec 25 18:45	18°♋29'41		opposition	3584 Sep 15 09:55	23°♋56'22	-1°-57'-23
				min. Earth dist.	3584 Sep 15 10:31	23°♋56'15	8.84113 AU
conjunction	3579 Jan 11 12:13	20°♋28'04	0°38'51	direct	3584 Nov 23 15:38	20°♋37'30	
minimum elong	3579 Jan 11 12:14	20°♋28'05	0°38'51	evening set	3585 Mar 03 12:30	27°♋46'42	
max. Earth dist.	3579 Jan 11 11:13	20°♋27'47	10.97727 AU				
morning rise	3579 Jan 28 04:10	22°♋26'04		conjunction	3585 Mar 20 06:20	29°♋47'22	-1°-44'-29
retrograde	3579 May 08 15:48	29°♋28'39		minimum elong	3585 Mar 20 06:18	29°♋47'21	1°44'30
opposition	3579 Jul 17 20:06	26°♋10'21	0°31'53	max. Earth dist.	3585 Mar 20 05:11	29°♋47'01	10.80261 AU
min. Earth dist.	3579 Jul 17 21:11	26°♋10'09	8.98874 AU		3585 Mar 22 00:07	0°♌	
direct	3579 Sep 26 17:23	22°♋50'24		morning rise	3585 Apr 06 03:31	1°♌49'02	
evening set	3580 Jan 06 07:22	29°♋56'04		retrograde	3585 Jul 19 10:30	9°♌16'54	
	3580 Jan 06 20:53	0°♌		opposition	3585 Sep 28 01:02	5°♌54'03	-2°-18'-3
				min. Earth dist.	3585 Sep 28 01:32	5°♌53'57	8.76263 AU
conjunction	3580 Jan 22 23:54	1°♌54'02	0°13'00	direct	3585 Dec 05 19:36	2°♌34'47	
minimum elong	3580 Jan 22 23:54	1°♌54'02	0°13'00	evening set	3586 Mar 15 16:32	9°♌48'32	
behind sun begin	3580 Jan 22 19:34	1°♌52'46					
behind sun end	3580 Jan 23 04:14	1°♌55'18		conjunction	3586 Apr 01 12:21	11°♌50'45	-1°-58'-55
max. Earth dist.	3580 Jan 22 22:04	1°♌53'30	10.99521 AU	minimum elong	3586 Apr 01 12:19	11°♌50'45	1°58'55
morning rise	3580 Feb 08 15:55	3°♌51'50		max. Earth dist.	3586 Apr 01 12:15	11°♌50'44	10.71817 AU
retrograde	3580 May 19 13:13	10°♌55'20		morning rise	3586 Apr 18 11:54	13°♌54'09	
desc. node	3580 Jul 26 03:42	7°♌49'37		retrograde	3586 Aug 01 10:49	21°♌29'38	
opposition	3580 Jul 29 01:26	7°♌36'42	0°00'-14	opposition	3586 Oct 10 20:06	18°♌05'37	-2°-33'00
min. Earth dist.	3580 Jul 29 03:00	7°♌36'25	8.99687 AU	min. Earth dist.	3586 Oct 10 19:52	18°♌05'39	8.67359 AU
direct	3580 Oct 07 17:23	4°♌17'20		direct	3586 Dec 18 05:06	14°♌45'45	
evening set	3581 Jan 16 18:48	11°♌20'59		evening set	3587 Mar 28 03:45	22°♌05'02	



conjunction	3587 Apr 14 02:13	24° $\Upsilon$ 09'11	-2°-8'-12	conjunction	3593 Jul 04 05:53	13° $\Theta$ 45'44	0°-52'-58
minimum elong	3587 Apr 14 02:12	24° $\Upsilon$ 09'11	2°08'12	minimum elong	3593 Jul 04 05:55	13° $\Theta$ 45'45	0°53'00
max. Earth dist.	3587 Apr 14 02:54	24° $\Upsilon$ 09'23	10.62492 AU	max. Earth dist.	3593 Jul 04 07:42	13° $\Theta$ 46'20	10.12183 AU
morning rise	3587 May 01 04:39	26° $\Upsilon$ 14'36		morning rise	3593 Jul 22 07:46	16° $\Theta$ 04'45	
	3587 Jun 03 18:37	0° $\mathcal{B}$		retrograde	3593 Nov 05 02:17	24° $\Theta$ 17'26	
retrograde	3587 Aug 14 19:19	3° $\mathcal{B}$ 57'52		opposition	3594 Jan 11 11:21	20° $\Theta$ 48'39	0°-47'-15
opposition	3587 Oct 23 19:28	0° $\mathcal{B}$ 32'42	-2°-41'-10	min. Earth dist.	3594 Jan 11 09:42	20° $\Theta$ 48'59	8.10455 AU
min. Earth dist.	3587 Oct 23 18:37	0° $\mathcal{B}$ 32'52	8.57751 AU	direct	3594 Mar 19 05:09	17° $\Theta$ 21'09	
	3587 Oct 30 20:55	30° $\mathcal{R}\Upsilon$		evening set	3594 Jul 01 00:37	25° $\Theta$ 26'21	
direct	3587 Dec 30 17:01	27° $\Upsilon$ 12'03					
	3588 Feb 26 10:35	0° $\mathcal{B}$		conjunction	3594 Jul 19 03:01	27° $\Theta$ 45'49	0°-22'-27
evening set	3588 Apr 08 22:49	4° $\mathcal{B}$ 37'40		minimum elong	3594 Jul 19 03:02	27° $\Theta$ 45'50	0°22'29
				max. Earth dist.	3594 Jul 19 04:50	27° $\Theta$ 46'24	10.09311 AU
conjunction	3588 Apr 26 00:32	6° $\mathcal{B}$ 44'00	-2°-11'-36		3594 Aug 05 12:38	0° $\mathcal{Q}$	
minimum elong	3588 Apr 26 00:33	6° $\mathcal{B}$ 44'00	2°11'36	morning rise	3594 Aug 06 06:26	0° $\mathcal{Q}$ 05'38	
max. Earth dist.	3588 Apr 26 01:00	6° $\mathcal{B}$ 44'09	10.52669 AU	retrograde	3594 Nov 19 10:50	8° $\mathcal{Q}$ 17'09	
morning rise	3588 May 13 06:38	8° $\mathcal{B}$ 51'44		opposition	3595 Jan 25 11:37	4° $\mathcal{Q}$ 48'41	0°-8'-5
	3588 Jul 12 15:07	15° $\mathcal{B}$		min. Earth dist.	3595 Jan 25 10:05	4° $\mathcal{Q}$ 49'00	8.08798 AU
retrograde	3588 Aug 27 09:09	16° $\mathcal{B}$ 42'36		direct	3595 Apr 02 09:02	1° $\mathcal{Q}$ 20'18	
	3588 Oct 12 20:53	15° $\mathcal{R}\mathcal{B}$		asc. node	3595 Apr 12 10:56	1° $\mathcal{Q}$ 25'57	
opposition	3588 Nov 04 23:42	13° $\mathcal{B}$ 16'22	-2°-41'-44	evening set	3595 Jul 15 22:16	9° $\mathcal{Q}$ 28'49	
min. Earth dist.	3588 Nov 04 22:57	13° $\mathcal{B}$ 16'30	8.47824 AU				
direct	3589 Jan 11 10:46	9° $\mathcal{B}$ 54'42		conjunction	3595 Aug 03 01:42	11° $\mathcal{Q}$ 48'39	0°09'32
	3589 Apr 01 06:47	15° $\mathcal{B}$		minimum elong	3595 Aug 03 01:41	11° $\mathcal{Q}$ 48'38	0°09'32
evening set	3589 Apr 22 02:11	17° $\mathcal{B}$ 27'16		behind sun begin	3595 Aug 02 19:38	11° $\mathcal{Q}$ 46'42	
				behind sun end	3595 Aug 03 07:45	11° $\mathcal{Q}$ 50'35	
conjunction	3589 May 09 07:54	19° $\mathcal{B}$ 36'04	-2°-8'-33	max. Earth dist.	3595 Aug 03 03:17	11° $\mathcal{Q}$ 49'08	10.08914 AU
minimum elong	3589 May 09 07:56	19° $\mathcal{B}$ 36'05	2°08'34	morning rise	3595 Aug 21 05:02	14° $\mathcal{Q}$ 08'25	
max. Earth dist.	3589 May 09 07:39	19° $\mathcal{B}$ 35'59	10.42742 AU		3595 Aug 28 01:39	15° $\mathcal{Q}$	
morning rise	3589 May 26 18:15	21° $\mathcal{B}$ 46'19		retrograde	3595 Dec 03 16:53	22° $\mathcal{Q}$ 16'52	
retrograde	3589 Sep 10 03:59	29° $\mathcal{B}$ 44'17		opposition	3596 Feb 08 11:47	18° $\mathcal{Q}$ 48'59	0°31'34
opposition	3589 Nov 18 08:39	26° $\mathcal{B}$ 17'05	-2°-34'-6	min. Earth dist.	3596 Feb 08 10:35	18° $\mathcal{Q}$ 49'14	8.09659 AU
min. Earth dist.	3589 Nov 18 08:34	26° $\mathcal{B}$ 17'06	8.37988 AU	direct	3596 Apr 15 16:27	15° $\mathcal{Q}$ 19'57	
direct	3590 Jan 24 12:03	22° $\mathcal{B}$ 54'17		evening set	3596 Jul 29 20:42	23° $\mathcal{Q}$ 30'02	
	3590 Apr 30 23:12	0° $\mathcal{I}$					
evening set	3590 May 05 14:32	0° $\mathcal{I}$ 34'13		conjunction	3596 Aug 16 23:34	25° $\mathcal{Q}$ 49'21	0°40'50
				minimum elong	3596 Aug 16 23:32	25° $\mathcal{Q}$ 49'21	0°40'49
conjunction	3590 May 23 00:53	2° $\mathcal{I}$ 45'40	-1°-58'-48	max. Earth dist.	3596 Aug 17 00:42	25° $\mathcal{Q}$ 49'43	10.11005 AU
minimum elong	3590 May 23 00:56	2° $\mathcal{I}$ 45'41	1°58'49	morning rise	3596 Sep 04 01:15	28° $\mathcal{Q}$ 08'16	
max. Earth dist.	3590 May 23 00:27	2° $\mathcal{I}$ 45'32	10.33160 AU		3596 Sep 19 04:04	0° $\mathcal{P}$	
morning rise	3590 Jun 09 15:44	4° $\mathcal{I}$ 58'30		retrograde	3596 Dec 16 18:06	6° $\mathcal{P}$ 11'57	
retrograde	3590 Sep 24 04:22	13° $\mathcal{I}$ 02'36		opposition	3597 Feb 21 10:29	2° $\mathcal{P}$ 44'53	1°09'09
opposition	3590 Dec 01 21:59	9° $\mathcal{I}$ 34'40	-2°-18'-8	min. Earth dist.	3597 Feb 21 09:28	2° $\mathcal{P}$ 45'06	8.12965 AU
min. Earth dist.	3590 Dec 01 22:05	9° $\mathcal{I}$ 34'39	8.28770 AU		3597 Apr 01 04:43	30° $\mathcal{R}\mathcal{Q}$	
direct	3591 Feb 06 19:20	6° $\mathcal{I}$ 10'39		direct	3597 Apr 30 01:05	29° $\mathcal{Q}$ 15'31	
evening set	3591 May 19 11:45	13° $\mathcal{I}$ 57'59			3597 May 28 19:27	0° $\mathcal{P}$	
				evening set	3597 Aug 13 17:07	7° $\mathcal{P}$ 25'16	
conjunction	3591 Jun 06 03:00	16° $\mathcal{I}$ 12'02	-1°-42'-28				
minimum elong	3591 Jun 06 03:04	16° $\mathcal{I}$ 12'03	1°42'30	conjunction	3597 Aug 31 17:59	9° $\mathcal{P}$ 43'18	1°09'32
max. Earth dist.	3591 Jun 06 03:12	16° $\mathcal{I}$ 12'06	10.24506 AU	minimum elong	3597 Aug 31 17:56	9° $\mathcal{P}$ 43'17	1°09'32
morning rise	3591 Jun 23 22:12	18° $\mathcal{I}$ 27'20		max. Earth dist.	3597 Aug 31 18:54	9° $\mathcal{P}$ 43'36	10.15427 AU
retrograde	3591 Oct 08 09:31	26° $\mathcal{I}$ 36'11		morning rise	3597 Sep 18 16:33	12° $\mathcal{P}$ 00'36	
opposition	3591 Dec 15 15:30	23° $\mathcal{I}$ 07'43	-1°-54'-12	retrograde	3597 Dec 30 13:43	19° $\mathcal{P}$ 58'14	
min. Earth dist.	3591 Dec 15 15:04	23° $\mathcal{I}$ 07'48	8.20773 AU	opposition	3598 Mar 07 06:45	16° $\mathcal{P}$ 32'09	1°42'19
direct	3592 Feb 20 08:59	19° $\mathcal{I}$ 42'29		min. Earth dist.	3598 Mar 07 05:28	16° $\mathcal{P}$ 32'25	8.18476 AU
evening set	3592 Jun 01 17:11	27° $\mathcal{I}$ 36'42		direct	3598 May 14 08:56	13° $\mathcal{P}$ 02'47	
				evening set	3598 Aug 28 08:49	21° $\mathcal{P}$ 10'17	
conjunction	3592 Jun 19 13:05	29° $\mathcal{I}$ 53'06	-1°-20'-9				
minimum elong	3592 Jun 19 13:09	29° $\mathcal{I}$ 53'07	1°20'11	conjunction	3598 Sep 15 06:28	23° $\mathcal{P}$ 26'24	1°33'57
max. Earth dist.	3592 Jun 19 14:23	29° $\mathcal{I}$ 53'31	10.17357 AU	minimum elong	3598 Sep 15 06:25	23° $\mathcal{P}$ 26'23	1°33'57
	3592 Jun 20 10:33	0° $\mathcal{\Theta}$		max. Earth dist.	3598 Sep 15 07:39	23° $\mathcal{P}$ 26'47	10.21884 AU
morning rise	3592 Jul 07 12:06	2° $\mathcal{\Theta}$ 10'33		morning rise	3598 Oct 03 00:51	25° $\mathcal{P}$ 41'30	
retrograde	3592 Oct 21 17:22	10° $\mathcal{\Theta}$ 22'21			3598 Nov 09 14:59	0° $\mathcal{\Delta}$	
opposition	3592 Dec 28 12:20	6° $\mathcal{\Theta}$ 53'34	-1°-23'-21	retrograde	3599 Jan 13 04:06	3° $\mathcal{\Delta}$ 32'13	
min. Earth dist.	3592 Dec 28 11:00	6° $\mathcal{\Theta}$ 53'50	8.14533 AU	opposition	3599 Mar 20 23:42	0° $\mathcal{\Delta}$ 07'15	2°09'10
direct	3593 Mar 05 04:41	3° $\mathcal{\Theta}$ 27'09		min. Earth dist.	3599 Mar 20 22:04	0° $\mathcal{\Delta}$ 07'35	8.25841 AU
evening set	3593 Jun 16 06:05	11° $\mathcal{\Theta}$ 27'28			3599 Mar 22 11:37	30° $\mathcal{R}\mathcal{P}$	



direct	3599 May 28 13:00	26° <u>17</u> 38'13	
	3599 Jul 31 23:05	0° <u>1</u>	
evening set	3599 Sep 11 17:44	4° <u>1</u> 41'42	
conjunction	3599 Sep 29 11:28	6° <u>1</u> 55'31	1°52'49
minimum elong	3599 Sep 29 11:25	6° <u>1</u> 55'30	1°52'48
max. Earth dist.	3599 Sep 29 12:56	6° <u>1</u> 55'59	10.29991 AU
morning rise	3599 Oct 17 01:08	9° <u>1</u> 08'06	
retrograde	3600 Jan 26 13:12	16° <u>1</u> 51'21	
opposition	3600 Apr 02 12:31	13° <u>1</u> 27'35	2°28'27
min. Earth dist.	3600 Apr 02 10:57	13° <u>1</u> 27'54	8.34629 AU
direct	3600 Jun 10 12:54	9° <u>1</u> 59'11	
evening set	3600 Sep 24 18:16	17° <u>1</u> 57'12	
conjunction	3600 Oct 12 07:45	20° <u>1</u> 08'31	2°05'19
minimum elong	3600 Oct 12 07:44	20° <u>1</u> 08'31	2°05'19
max. Earth dist.	3600 Oct 12 09:11	20° <u>1</u> 08'58	10.39284 AU
morning rise	3600 Oct 29 16:44	22° <u>1</u> 18'30	



retrograde	3600 Jan 26 13:12	16°♂51'21			3606 May 18 10:35	30°♂♂	
opposition	3600 Apr 02 12:31	13°♂27'35	2°28'27	opposition	3606 Jun 17 20:56	27°♂53'56	1°43'47
min. Earth dist.	3600 Apr 02 10:57	13°♂27'54	8.34629 AU	min. Earth dist.	3606 Jun 17 21:30	27°♂53'49	8.89774 AU
direct	3600 Jun 10 12:54	9°♂59'11		direct	3606 Aug 27 18:20	24°♂32'23	
evening set	3600 Sep 24 18:16	17°♂57'12			3606 Nov 23 02:16	0°♂	
				evening set	3606 Dec 09 01:17	1°♂48'37	
conjunction	3600 Oct 12 07:45	20°♂08'31	2°05'19				
minimum elong	3600 Oct 12 07:44	20°♂08'31	2°05'19	conjunction	3606 Dec 25 20:29	3°♂48'09	1°13'53
max. Earth dist.	3600 Oct 12 09:11	20°♂08'58	10.39284 AU	minimum elong	3606 Dec 25 20:31	3°♂48'10	1°13'52
morning rise	3600 Oct 29 16:44	22°♂18'30		max. Earth dist.	3606 Dec 25 19:26	3°♂47'50	10.92760 AU
retrograde	3601 Feb 07 14:43	29°♂54'07		morning rise	3607 Jan 11 13:18	5°♂47'00	
opposition	3601 Apr 15 20:58	26°♂31'37	2°39'33	retrograde	3607 Apr 21 12:29	12°♂50'42	
min. Earth dist.	3601 Apr 15 20:11	26°♂31'46	8.44341 AU	opposition	3607 Jun 30 05:44	9°♂33'05	1°16'32
direct	3601 Jun 24 08:40	23°♂04'05		min. Earth dist.	3607 Jun 30 06:59	9°♂32'51	8.95397 AU
	3601 Sep 30 16:40	0°♂		direct	3607 Sep 09 04:55	6°♂12'32	
evening set	3601 Oct 08 09:35	0°♂55'36		evening set	3607 Dec 20 18:28	13°♂23'35	
conjunction	3601 Oct 25 18:46	3°♂04'22	2°11'10	conjunction	3608 Jan 06 12:17	15°♂22'11	0°50'26
minimum elong	3601 Oct 25 18:45	3°♂04'22	2°11'10	minimum elong	3608 Jan 06 12:19	15°♂22'12	0°50'26
max. Earth dist.	3601 Oct 25 19:21	3°♂04'33	10.49256 AU	max. Earth dist.	3608 Jan 06 10:28	15°♂21'39	10.97506 AU
morning rise	3601 Nov 11 23:27	5°♂11'48		morning rise	3608 Jan 23 04:32	17°♂20'19	
retrograde	3602 Feb 20 09:36	12°♂40'02		retrograde	3608 May 02 11:16	24°♂22'47	
opposition	3602 Apr 29 00:45	9°♂18'46	2°42'25	opposition	3608 Jul 11 12:21	21°♂05'10	0°46'29
min. Earth dist.	3602 Apr 29 00:40	9°♂18'47	8.54471 AU	min. Earth dist.	3608 Jul 11 13:27	21°♂04'58	8.99167 AU
direct	3602 Jul 07 23:11	5°♂52'19		direct	3608 Sep 20 11:15	17°♂45'28	
evening set	3602 Oct 21 15:14	13°♂36'38		evening set	3608 Dec 31 08:16	24°♂52'28	
	3602 Nov 02 00:48	15°♂					
conjunction	3602 Nov 07 20:30	15°♂43'00	2°10'28	conjunction	3609 Jan 17 01:12	26°♂50'29	0°25'08
minimum elong	3602 Nov 07 20:30	15°♂43'00	2°10'29	minimum elong	3609 Jan 17 01:13	26°♂50'29	0°25'08
max. Earth dist.	3602 Nov 07 20:09	15°♂42'53	10.59409 AU	max. Earth dist.	3609 Jan 16 23:46	26°♂50'04	11.00286 AU
morning rise	3602 Nov 24 21:33	17°♂48'05		morning rise	3609 Feb 02 17:06	28°♂48'15	
retrograde	3603 Mar 04 23:10	25°♂09'27			3609 Feb 13 04:57	0°♂	
opposition	3603 May 11 23:53	21°♂49'18	2°37'25	retrograde	3609 May 14 09:54	5°♂50'57	
min. Earth dist.	3603 May 11 23:54	21°♂49'17	8.64525 AU	opposition	3609 Jul 23 18:03	2°♂33'04	0°14'46
direct	3603 Jul 21 07:01	18°♂24'05		min. Earth dist.	3609 Jul 23 18:59	2°♂32'54	9.00883 AU
evening set	3603 Nov 03 11:24	26°♂00'52			3609 Sep 01 05:03	30°♂♂	
				direct	3609 Oct 02 12:36	29°♂14'02	
conjunction	3603 Nov 20 13:24	28°♂05'05	2°03'40		3609 Nov 02 07:20	0°♂	
minimum elong	3603 Nov 20 13:25	28°♂05'06	2°03'40	evening set	3610 Jan 11 20:13	6°♂18'19	
max. Earth dist.	3603 Nov 20 12:49	28°♂04'55	10.69257 AU	desc. node	3610 Jan 12 11:43	6°♂22'49	
	3603 Dec 06 08:19	0°♂♂					
morning rise	3603 Dec 07 11:27	0°♂08'07		conjunction	3610 Jan 28 12:30	8°♂16'05	0°-1'-9
retrograde	3604 Mar 16 07:09	7°♂23'25		minimum elong	3610 Jan 28 12:30	8°♂16'05	0°01'09
opposition	3604 May 23 18:34	4°♂04'13	2°25'20	behind sun begin	3610 Jan 28 05:31	8°♂14'03	
min. Earth dist.	3604 May 23 18:14	4°♂04'17	8.74022 AU	behind sun end	3610 Jan 28 19:29	8°♂18'08	
direct	3604 Aug 02 09:42	0°♂40'16		max. Earth dist.	3610 Jan 28 10:55	8°♂15'41	11.00927 AU
evening set	3604 Nov 14 23:07	8°♂09'40		morning rise	3610 Feb 14 04:28	10°♂13'49	
					3610 Apr 02 03:43	15°♂	
conjunction	3604 Dec 01 22:26	10°♂12'00	1°51'25	retrograde	3610 May 26 10:49	17°♂18'20	
minimum elong	3604 Dec 01 22:28	10°♂12'01	1°51'24		3610 Jul 22 05:31	15°♂♂	
max. Earth dist.	3604 Dec 01 22:23	10°♂11'59	10.78340 AU	opposition	3610 Aug 04 23:39	13°♂59'58	0°-17'-28
morning rise	3604 Dec 18 18:00	12°♂13'17		min. Earth dist.	3610 Aug 05 01:08	13°♂59'41	9.00431 AU
retrograde	3605 Mar 28 12:40	19°♂23'32		direct	3610 Oct 14 12:46	10°♂41'20	
opposition	3605 Jun 05 09:21	16°♂05'05	2°07'06		3610 Dec 29 10:49	15°♂	
min. Earth dist.	3605 Jun 05 09:11	16°♂05'07	8.82551 AU	evening set	3611 Jan 23 08:11	17°♂44'25	
direct	3605 Aug 15 05:44	12°♂42'24					
evening set	3605 Nov 27 03:22	20°♂04'50		conjunction	3611 Feb 09 00:02	19°♂42'16	0°-27'-20
				minimum elong	3611 Feb 09 00:01	19°♂42'16	0°27'20
conjunction	3605 Dec 14 00:26	22°♂05'37	1°34'31	max. Earth dist.	3611 Feb 08 21:15	19°♂41'27	10.99397 AU
minimum elong	3605 Dec 14 00:28	22°♂05'38	1°34'30	morning rise	3611 Feb 25 16:35	21°♂40'20	
max. Earth dist.	3605 Dec 14 00:18	22°♂05'35	10.86280 AU	retrograde	3611 Jun 07 13:13	28°♂48'04	
morning rise	3605 Dec 30 18:16	24°♂05'30		opposition	3611 Aug 17 05:54	25°♂28'59	0°-49'-8
	3606 Mar 02 16:52	0°♂		min. Earth dist.	3611 Aug 17 08:19	25°♂28'32	8.97861 AU
retrograde	3606 Apr 09 14:43	1°♂11'49		direct	3611 Oct 26 10:59	22°♂10'33	
				evening set	3612 Feb 03 21:27	29°♂13'51	





























































































































	3612 Feb 10 10:40	0°♄		minimum elong	3618 May 03 13:42	13°♄55'00	2°10'49
				max. Earth dist.	3618 May 03 14:02	13°♄55'06	10.45079 AU
conjunction	3612 Feb 20 13:19	1°♄12'07	0°-52'-33		3618 May 12 05:50	15°♄	
minimum elong	3612 Feb 20 13:17	1°♄12'07	0°52'34	morning rise	3618 May 20 22:04	16°♄04'18	
max. Earth dist.	3612 Feb 20 10:07	1°♄11'10	10.95809 AU	retrograde	3618 Sep 04 03:26	23°♄59'58	
morning rise	3612 Mar 08 06:44	3°♄10'51		opposition	3618 Nov 12 14:19	20°♄32'27	-2°-38'-46
retrograde	3612 Jun 18 18:09	10°♄23'11		min. Earth dist.	3618 Nov 12 13:43	20°♄32'34	8.40203 AU
opposition	3612 Aug 28 13:54	7°♄03'06	-1°-19'-4	direct	3619 Jan 18 22:43	17°♄09'29	
min. Earth dist.	3612 Aug 28 16:10	7°♄02'41	8.93324 AU	evening set	3619 Apr 29 18:13	24°♄46'50	
direct	3612 Nov 06 10:54	3°♄44'36					
evening set	3613 Feb 14 13:15	10°♄49'28		conjunction	3619 May 17 02:36	26°♄57'20	-2°-4'-8
				minimum elong	3619 May 17 02:38	26°♄57'21	2°04'09
conjunction	3613 Mar 03 05:39	12°♄48'30	-1°-15'-51	max. Earth dist.	3619 May 17 03:28	26°♄57'37	10.35221 AU
minimum elong	3613 Mar 03 05:37	12°♄48'29	1°15'52	morning rise	3619 Jun 03 15:16	29°♄09'14	
max. Earth dist.	3613 Mar 03 03:22	12°♄47'49	10.90342 AU		3619 Jun 10 13:15	0°♄	
morning rise	3613 Mar 20 00:10	14°♄48'12		retrograde	3619 Sep 18 03:22	7°♄11'35	
retrograde	3613 Jul 01 06:06	22°♄06'19		opposition	3619 Nov 26 02:03	3°♄43'13	-2°-26'-35
opposition	3613 Sep 10 00:21	18°♄45'03	-1°-46'-7	min. Earth dist.	3619 Nov 26 00:53	3°♄43'27	8.30695 AU
min. Earth dist.	3613 Sep 10 01:46	18°♄44'47	8.87026 AU	direct	3620 Feb 01 01:42	0°♄19'07	
direct	3613 Nov 18 12:19	15°♄26'16		evening set	3620 May 12 11:43	8°♄03'51	
evening set	3614 Feb 26 09:20	22°♄33'58					
				conjunction	3620 May 30 00:46	10°♄16'58	-1°-50'-46
conjunction	3614 Mar 15 02:44	24°♄34'07	-1°-36'-15	minimum elong	3620 May 30 00:49	10°♄16'59	1°50'48
minimum elong	3614 Mar 15 02:41	24°♄34'06	1°36'16	max. Earth dist.	3620 May 30 01:45	10°♄17'17	10.26232 AU
max. Earth dist.	3614 Mar 15 01:10	24°♄33'38	10.83232 AU	morning rise	3620 Jun 16 17:58	12°♄31'25	
morning rise	3614 Mar 31 22:50	26°♄35'07		retrograde	3620 Oct 01 07:44	20°♄39'09	
	3614 May 01 22:26	0°♄		opposition	3620 Dec 08 18:14	17°♄10'12	-2°-6'-11
retrograde	3614 Jul 13 22:27	3°♄59'57		min. Earth dist.	3620 Dec 08 16:56	17°♄10'28	8.22306 AU
opposition	3614 Sep 22 13:50	0°♄37'24	-2°-9'-7	direct	3621 Feb 13 12:26	13°♄44'56	
min. Earth dist.	3614 Sep 22 14:43	0°♄37'14	8.79232 AU	evening set	3621 May 26 13:49	21°♄36'49	
	3614 Sep 30 20:41	30°♄					
direct	3614 Nov 30 14:11	27°♄18'05		conjunction	3621 Jun 13 07:36	23°♄52'25	-1°-31'-3
	3615 Jan 27 02:34	0°♄		minimum elong	3621 Jun 13 07:39	23°♄52'26	1°31'05
evening set	3615 Mar 10 10:48	4°♄29'56		max. Earth dist.	3621 Jun 13 08:35	23°♄52'43	10.18623 AU
				morning rise	3621 Jul 01 05:06	26°♄09'10	
conjunction	3615 Mar 27 05:39	6°♄31'30	-1°-52'-48		3621 Aug 03 00:14	0°♄	
minimum elong	3615 Mar 27 05:37	6°♄31'29	1°52'49	retrograde	3621 Oct 15 14:17	4°♄20'37	
max. Earth dist.	3615 Mar 27 03:43	6°♄30'55	10.74777 AU	opposition	3621 Dec 22 14:08	0°♄51'24	-1°-38'-15
morning rise	3615 Apr 13 04:00	8°♄34'09		min. Earth dist.	3621 Dec 22 12:56	0°♄51'39	8.15526 AU
retrograde	3615 Jul 26 20:08	16°♄06'25			3622 Jan 02 04:48	30°♄	
opposition	3615 Oct 05 07:13	12°♄42'33	-2°-26'-54	direct	3622 Feb 27 06:24	27°♄25'03	
min. Earth dist.	3615 Oct 05 08:19	12°♄42'20	8.70254 AU		3622 Apr 22 12:44	0°♄	
direct	3615 Dec 12 20:35	9°♄22'31		evening set	3622 Jun 09 23:56	5°♄23'26	
evening set	3616 Mar 21 18:40	16°♄39'35					
				conjunction	3622 Jun 27 21:58	7°♄41'07	-1°-5'-53
conjunction	3616 Apr 07 15:41	18°♄42'57	-2°-4'-36	minimum elong	3622 Jun 27 22:01	7°♄41'08	1°05'54
minimum elong	3616 Apr 07 15:40	18°♄42'57	2°04'36	max. Earth dist.	3622 Jun 27 23:20	7°♄41'33	10.12844 AU
max. Earth dist.	3616 Apr 07 13:49	18°♄42'23	10.65324 AU	morning rise	3622 Jul 15 22:54	9°♄59'42	
morning rise	3616 Apr 24 16:51	20°♄47'34		retrograde	3622 Oct 29 22:42	18°♄12'55	
retrograde	3616 Aug 08 00:21	28°♄27'43		opposition	3623 Jan 05 12:42	14°♄43'47	-1°-4'-13
opposition	3616 Oct 17 04:58	25°♄02'33	-2°-38'-22	min. Earth dist.	3623 Jan 05 11:14	14°♄44'05	8.10784 AU
min. Earth dist.	3616 Oct 17 06:02	25°♄02'21	8.60466 AU	direct	3623 Mar 13 05:33	11°♄16'29	
direct	3616 Dec 24 07:29	21°♄41'39		evening set	3623 Jun 24 16:27	19°♄20'18	
evening set	3617 Apr 03 10:02	29°♄04'52					
	3617 Apr 10 22:32	0°♄		conjunction	3623 Jul 12 17:48	21°♄39'29	0°-36'-36
				minimum elong	3623 Jul 12 17:50	21°♄39'30	0°36'38
conjunction	3617 Apr 20 10:09	1°♄10'21	-2°-10'-49	max. Earth dist.	3623 Jul 12 20:03	21°♄40'13	10.09274 AU
minimum elong	3617 Apr 20 10:09	1°♄10'21	2°10'50	morning rise	3623 Jul 30 20:53	23°♄59'13	
max. Earth dist.	3617 Apr 20 09:13	1°♄10'04	10.55275 AU		3623 Sep 24 00:23	0°♄	
morning rise	3617 May 07 14:40	3°♄17'13		retrograde	3623 Nov 13 08:00	2°♄12'12	
retrograde	3617 Aug 21 10:19	11°♄05'19			3624 Jan 03 15:48	30°♄	
opposition	3617 Oct 30 07:16	7°♄38'54	-2°-42'-34	opposition	3624 Jan 19 13:06	28°♄43'27	0°-26'-4
min. Earth dist.	3617 Oct 30 07:44	7°♄38'48	8.50296 AU	min. Earth dist.	3624 Jan 19 10:53	28°♄43'54	8.08402 AU
direct	3618 Jan 06 00:19	4°♄17'00		direct	3624 Mar 26 08:21	25°♄15'24	
evening set	3618 Apr 16 09:40	11°♄47'05			3624 Jun 10 07:11	0°♄	
				evening set	3624 Jul 08 13:23	3°♄23'13	
conjunction	3618 May 03 13:41	13°♄55'00	-2°-10'-48				



conjunction	3624 Jul 26 16:39	5°♌43'08	0°-5'-4	direct	3630 Jun 18 16:06	17°♊35'08	
minimum elong	3624 Jul 26 16:39	5°♌43'08	0°05'05	evening set	3630 Oct 02 19:14	25°♊29'47	
behind sun begin	3624 Jul 26 09:31	5°♌40'51					
behind sun end	3624 Jul 26 23:47	5°♌45'25		conjunction	3630 Oct 20 06:16	27°♊39'40	2°09'14
max. Earth dist.	3624 Jul 26 19:45	5°♌44'06	10.08154 AU	minimum elong	3630 Oct 20 06:15	27°♊39'40	2°09'14
morning rise	3624 Aug 13 20:20	8°♌03'11		max. Earth dist.	3630 Oct 20 05:52	27°♊39'33	10.45375 AU
asc. node	3624 Sep 24 00:23	12°♌47'49		morning rise	3630 Nov 06 12:56	29°♊48'14	
	3624 Oct 20 16:48	15°♌			3630 Nov 08 03:33	0°♌	
retrograde	3624 Nov 26 16:40	16°♌13'55		retrograde	3631 Feb 15 04:31	7°♌19'58	
	3625 Jan 02 23:17	15°♌♌		opposition	3631 Apr 23 15:18	3°♌58'34	2°41'56
opposition	3625 Feb 01 13:59	12°♌45'49	0°13'45	min. Earth dist.	3631 Apr 23 14:58	3°♌58'38	8.50357 AU
min. Earth dist.	3625 Feb 01 11:10	12°♌46'24	8.08540 AU	direct	3631 Jul 02 09:18	0°♌32'03	
direct	3625 Apr 09 14:48	9°♌17'14		evening set	3631 Oct 16 05:41	8°♌19'54	
	3625 Jul 03 09:56	15°♌					
evening set	3625 Jul 23 12:36	17°♌27'23		conjunction	3631 Nov 02 12:49	10°♌27'23	2°11'23
				minimum elong	3631 Nov 02 12:49	10°♌27'23	2°11'24
conjunction	3625 Aug 10 16:07	19°♌47'09	0°26'54	max. Earth dist.	3631 Nov 02 12:31	10°♌27'17	10.55085 AU
minimum elong	3625 Aug 10 16:05	19°♌47'09	0°26'54	morning rise	3631 Nov 19 15:24	12°♌33'32	
max. Earth dist.	3625 Aug 10 19:40	19°♌48'18	10.09555 AU		3631 Dec 10 14:48	15°♌	
morning rise	3625 Aug 28 18:41	22°♌06'40		retrograde	3632 Feb 27 22:36	19°♌58'18	
	3625 Nov 25 11:51	0°♌		opposition	3632 May 05 16:55	16°♌37'56	2°40'20
retrograde	3625 Dec 10 21:18	0°♌13'15		min. Earth dist.	3632 May 05 17:17	16°♌37'52	8.60031 AU
	3625 Dec 26 06:58	30°♌♌			3632 May 27 16:10	15°♌♌	
opposition	3626 Feb 15 14:02	26°♌46'03	0°52'38	direct	3632 Jul 14 19:11	13°♌12'25	
min. Earth dist.	3626 Feb 15 11:05	26°♌46'40	8.11187 AU		3632 Aug 31 00:52	15°♌	
direct	3626 Apr 23 23:04	23°♌17'12		evening set	3632 Oct 28 06:50	20°♌53'01	
	3626 Jul 26 15:26	0°♌					
evening set	3626 Aug 07 11:05	1°♌27'46		conjunction	3632 Nov 14 10:25	22°♌58'17	2°07'12
				minimum elong	3632 Nov 14 10:26	22°♌58'18	2°07'13
conjunction	3626 Aug 25 13:09	3°♌46'32	0°57'02	max. Earth dist.	3632 Nov 14 09:30	22°♌58'01	10.64625 AU
minimum elong	3626 Aug 25 13:06	3°♌46'31	0°57'02	morning rise	3632 Dec 01 09:38	25°♌02'18	
max. Earth dist.	3626 Aug 25 16:38	3°♌47'39	10.13380 AU		3633 Jan 17 11:44	0°♌	
morning rise	3626 Sep 12 13:07	6°♌04'41		retrograde	3633 Mar 11 09:08	2°♌20'42	
retrograde	3626 Dec 24 21:00	14°♌05'36			3633 May 05 15:06	30°♌♌	
opposition	3627 Mar 01 12:16	10°♌39'29	1°28'03	opposition	3633 May 18 14:18	29°♌01'13	2°31'16
min. Earth dist.	3627 Mar 01 09:50	10°♌39'58	8.16161 AU	min. Earth dist.	3633 May 18 15:35	29°♌00'58	8.69320 AU
direct	3627 May 08 07:09	7°♌10'35		direct	3633 Jul 28 00:49	25°♌36'44	
evening set	3627 Aug 22 05:47	15°♌19'32			3633 Oct 12 17:05	0°♌	
				evening set	3633 Nov 09 22:58	3°♌09'58	
conjunction	3627 Sep 09 05:00	17°♌36'36	1°23'35				
minimum elong	3627 Sep 09 04:57	17°♌36'35	1°23'35	conjunction	3633 Nov 26 23:25	5°♌13'15	1°57'14
max. Earth dist.	3627 Sep 09 07:38	17°♌37'26	10.19362 AU	minimum elong	3633 Nov 26 23:27	5°♌13'16	1°57'14
morning rise	3627 Sep 27 01:15	19°♌52'44		max. Earth dist.	3633 Nov 26 21:33	5°♌12'41	10.73589 AU
retrograde	3628 Jan 07 14:51	27°♌46'52		morning rise	3633 Dec 13 20:06	7°♌15'25	
opposition	3628 Mar 14 07:21	24°♌21'53	1°57'55	retrograde	3634 Mar 23 15:14	14°♌28'22	
min. Earth dist.	3628 Mar 14 05:44	24°♌22'13	8.23096 AU	opposition	3634 May 31 07:32	11°♌09'32	2°15'36
direct	3628 May 21 13:13	20°♌53'12		min. Earth dist.	3634 May 31 09:15	11°♌09'13	8.77831 AU
evening set	3628 Sep 04 18:35	28°♌58'44		direct	3634 Aug 10 01:11	7°♌46'06	
	3628 Sep 12 22:00	0°♌		evening set	3634 Nov 22 06:58	15°♌12'13	
conjunction	3628 Sep 22 14:01	1°♌13'35	1°45'03	conjunction	3634 Dec 09 04:58	17°♌13'50	1°42'14
minimum elong	3628 Sep 22 13:58	1°♌13'34	1°45'02	minimum elong	3634 Dec 09 05:00	17°♌13'51	1°42'15
max. Earth dist.	3628 Sep 22 15:18	1°♌13'59	10.27056 AU	max. Earth dist.	3634 Dec 09 02:38	17°♌13'08	10.81602 AU
morning rise	3628 Oct 10 05:54	3°♌27'17		morning rise	3634 Dec 25 23:45	19°♌14'29	
retrograde	3629 Jan 20 02:08	11°♌13'55		retrograde	3635 Apr 04 18:19	26°♌23'02	
opposition	3629 Mar 27 22:20	7°♌50'09	2°20'41	opposition	3635 Jun 12 20:52	23°♌04'37	1°54'20
min. Earth dist.	3629 Mar 27 21:32	7°♌50'19	8.31468 AU	min. Earth dist.	3635 Jun 12 22:10	23°♌04'22	8.85214 AU
direct	3629 Jun 04 16:38	4°♌21'56		direct	3635 Aug 22 18:51	19°♌42'11	
evening set	3629 Sep 18 23:29	12°♌22'35		evening set	3635 Dec 04 07:56	27°♌01'46	
conjunction	3629 Oct 06 14:43	14°♌34'58	2°00'26	conjunction	3635 Dec 21 04:07	29°♌02'02	1°23'06
minimum elong	3629 Oct 06 14:41	14°♌34'58	2°00'26	minimum elong	3635 Dec 21 04:09	29°♌02'03	1°23'05
max. Earth dist.	3629 Oct 06 14:43	14°♌34'58	10.35898 AU	max. Earth dist.	3635 Dec 21 02:26	29°♌01'32	10.88332 AU
morning rise	3629 Oct 24 01:56	16°♌46'06			3635 Dec 29 05:41	0°♌	
retrograde	3630 Feb 02 05:45	24°♌25'09		morning rise	3636 Jan 06 21:30	1°♌01'32	
opposition	3630 Apr 10 09:02	21°♌02'36	2°35'27	retrograde	3636 Apr 15 18:53	8°♌06'55	
min. Earth dist.	3630 Apr 10 08:35	21°♌02'41	8.40706 AU	opposition	3636 Jun 24 07:11	4°♌48'42	1°28'37



min. Earth dist.	3636 Jun 24 08:09	4°  48'32	8.91166 AU	morning rise	3642 Mar 15 09:31	10°  06'33	
direct	3636 Sep 03 07:22	1°  27'12		retrograde	3642 Jun 26 08:34	17°  22'19	
evening set	3636 Dec 15 03:27	8°  41'09		opposition	3642 Sep 05 02:38	14°  01'22	-1°-35'-7
				min. Earth dist.	3642 Sep 05 03:14	14°  01'15	8.89212 AU
conjunction	3636 Dec 31 22:07	10°  40'23	1°00'43	direct	3642 Nov 13 17:36	10°  42'34	
minimum elong	3636 Dec 31 22:09	10°  40'23	1°00'43	evening set	3643 Feb 21 17:40	17°  49'10	
max. Earth dist.	3636 Dec 31 20:52	10°  40'00	10.93507 AU				
morning rise	3637 Jan 17 14:33	12°  39'01		conjunction	3643 Mar 10 10:26	19°  48'49	-1°-28'-1
retrograde	3637 Apr 27 18:38	19°  42'36		minimum elong	3643 Mar 10 10:24	19°  48'49	1°28'02
opposition	3637 Jul 06 15:14	16°  24'25	0°59'35	max. Earth dist.	3643 Mar 10 09:06	19°  48'25	10.86084 AU
min. Earth dist.	3637 Jul 06 16:31	16°  24'11	8.95474 AU	morning rise	3643 Mar 27 05:56	21°  49'17	
direct	3637 Sep 15 14:21	13°  03'44		retrograde	3643 Jul 08 20:43	29°  11'11	
evening set	3637 Dec 26 19:00	20°  13'09		opposition	3643 Sep 17 14:44	25°  49'14	-1°-59'-54
				min. Earth dist.	3643 Sep 17 15:22	25°  49'07	8.82705 AU
conjunction	3638 Jan 12 12:24	22°  11'39	0°36'04	direct	3643 Nov 25 19:19	22°  43'14	
minimum elong	3638 Jan 12 12:25	22°  11'40	0°36'04	evening set	3644 Mar 04 16:40	29°  40'16	
max. Earth dist.	3638 Jan 12 10:28	22°  11'05	10.96953 AU		3644 Mar 07 11:06	0°  00'00	
morning rise	3638 Jan 29 04:31	24°  09'48					
	3638 Apr 01 00:01	0°  00'00		conjunction	3644 Mar 21 10:46	1°  41'09	-1°-46'-16
retrograde	3638 May 09 16:11	1°  13'00		minimum elong	3644 Mar 21 10:43	1°  41'08	1°46'17
	3638 Jun 18 09:23	30°  00'00		max. Earth dist.	3644 Mar 21 10:29	1°  41'04	10.78857 AU
opposition	3638 Jul 18 21:49	27°  54'38	0°28'23	morning rise	3644 Apr 07 08:04	3°  43'02	
min. Earth dist.	3638 Jul 18 23:35	27°  54'18	8.97997 AU	retrograde	3644 Jul 20 16:04	11°  11'57	
direct	3638 Sep 27 17:29	24°  34'39		opposition	3644 Sep 29 06:25	7°  48'53	-2°-19'-57
	3638 Dec 23 11:09	0°  00'00		min. Earth dist.	3644 Sep 29 06:08	7°  48'56	8.74885 AU
evening set	3639 Jan 07 07:56	1°  40'48		direct	3644 Dec 07 01:20	4°  29'30	
				evening set	3645 Mar 16 21:30	11°  44'02	
conjunction	3639 Jan 24 00:30	3°  38'53	0°10'06				
minimum elong	3639 Jan 24 00:30	3°  38'53	0°10'07	conjunction	3645 Apr 02 17:34	13°  46'30	-2°00'-8
behind sun begin	3639 Jan 23 18:51	3°  37'13		minimum elong	3645 Apr 02 17:33	13°  46'30	2°00'08
behind sun end	3639 Jan 24 06:09	3°  40'32		max. Earth dist.	3645 Apr 02 18:22	13°  46'45	10.70469 AU
max. Earth dist.	3639 Jan 23 22:16	3°  38'14	10.98548 AU	morning rise	3645 Apr 19 17:15	15°  50'08	
morning rise	3639 Feb 09 16:42	5°  36'51		retrograde	3645 Aug 02 19:23	23°  26'34	
retrograde	3639 May 21 15:44	12°  41'09		opposition	3645 Oct 12 02:10	20°  02'22	-2°-34'-8
desc. node	3639 Jun 16 13:29	12°  40'07		min. Earth dist.	3645 Oct 12 01:04	20°  02'35	8.66071 AU
opposition	3639 Jul 31 03:40	9°  22'23	0°-3'-49	direct	3645 Dec 19 09:15	16°  42'24	
min. Earth dist.	3639 Jul 31 05:04	9°  22'08	8.98626 AU	evening set	3646 Mar 29 09:37	24°  02'27	
direct	3639 Oct 09 20:14	6°  02'58					
evening set	3640 Jan 18 19:58	13°  07'10		conjunction	3646 Apr 15 08:16	26°  06'49	-2°-8'-45
	3640 Feb 03 18:40	15°  00'00		minimum elong	3646 Apr 15 08:15	26°  06'48	2°08'46
				max. Earth dist.	3646 Apr 15 09:06	26°  07'04	10.61277 AU
conjunction	3640 Feb 04 12:07	15°  05'11	0°-16'-19	morning rise	3646 May 02 11:03	28°  12'29	
minimum elong	3640 Feb 04 12:07	15°  05'11	0°16'19		3646 May 17 17:05	0°  00'00	
max. Earth dist.	3640 Feb 04 10:39	15°  04'45	10.98211 AU	retrograde	3646 Aug 16 02:52	5°  56'33	
morning rise	3640 Feb 21 04:30	17°  03'17		opposition	3646 Oct 25 02:09	2°  31'16	-2°-41'-26
retrograde	3640 Jun 01 17:45	24°  10'05		min. Earth dist.	3646 Oct 25 01:03	2°  31'29	8.56633 AU
opposition	3640 Aug 11 09:42	20°  50'45	0°-35'-54		3646 Nov 30 21:30	30°  00'00	
min. Earth dist.	3640 Aug 11 10:14	20°  50'39	8.97325 AU	direct	3646 Dec 31 22:01	29°  10'29	
direct	3640 Oct 20 19:18	17°  31'45			3647 Jan 31 11:58	0°  00'00	
evening set	3641 Jan 29 08:39	24°  35'23		evening set	3647 Apr 11 05:30	6°  36'50	
conjunction	3641 Feb 15 00:40	26°  33'36	0°-42'-4	conjunction	3647 Apr 28 07:28	8°  43'24	-2°-11'-25
minimum elong	3641 Feb 15 00:39	26°  33'36	0°42'06	minimum elong	3647 Apr 28 07:29	8°  43'24	2°11'25
max. Earth dist.	3641 Feb 14 23:55	26°  33'23	10.95951 AU	max. Earth dist.	3647 Apr 28 07:48	8°  43'30	10.51669 AU
morning rise	3641 Mar 03 17:35	28°  32'10		morning rise	3647 May 15 14:01	10°  51'21	
	3641 Mar 16 14:01	0°  00'00			3647 Jun 21 14:25	15°  00'00	
retrograde	3641 Jun 13 22:47	5°  42'51		retrograde	3647 Aug 29 16:07	18°  42'50	
opposition	3641 Aug 23 17:08	2°  22'46	-1°-6'-43	opposition	3647 Nov 07 06:51	15°  16'31	-2°-41'-3
min. Earth dist.	3641 Aug 23 17:25	2°  22'43	8.94148 AU	min. Earth dist.	3647 Nov 07 06:14	15°  16'38	8.46964 AU
	3641 Sep 28 09:40	30°  00'00			3647 Nov 10 18:59	15°  00'00	
direct	3641 Nov 01 18:01	29°  03'59		direct	3648 Jan 13 18:01	11°  54'44	
	3641 Dec 05 09:04	0°  00'00			3648 Mar 14 05:39	15°  00'00	
evening set	3642 Feb 09 23:23	6°  08'25		evening set	3648 Apr 23 09:33	19°  27'52	
conjunction	3642 Feb 26 15:30	8°  07'12	-1°-6'-18	conjunction	3648 May 10 15:37	21°  36'52	-2°-7'-36
minimum elong	3642 Feb 26 15:28	8°  07'11	1°06'19	minimum elong	3648 May 10 15:39	21°  36'53	2°07'37
max. Earth dist.	3642 Feb 26 14:21	8°  06'51	10.91857 AU	max. Earth dist.	3648 May 10 16:04	21°  37'01	10.42043 AU



morning rise	3648 May 28 02:20	23° $\text{♄}$ 47'18		max. Earth dist.	3654 Aug 04 10:32	13° $\text{♄}$ 48'04	10.09757 AU
	3648 Jul 27 09:46	0° $\text{♄}$			3654 Aug 13 17:37	15° $\text{♄}$	
retrograde	3648 Sep 11 11:39	1° $\text{♄}$ 45'37		morning rise	3654 Aug 22 12:50	16° $\text{♄}$ 07'22	
	3648 Oct 28 07:55	30° $\text{♄}$		retrograde	3654 Dec 04 21:58	24° $\text{♄}$ 14'57	
opposition	3648 Nov 19 16:07	28° $\text{♄}$ 18'21	-2°-32'-28	opposition	3655 Feb 09 17:47	20° $\text{♄}$ 47'15	0°35'39
min. Earth dist.	3648 Nov 19 15:41	28° $\text{♄}$ 18'26	8.37462 AU	min. Earth dist.	3655 Feb 09 16:48	20° $\text{♄}$ 47'27	8.10573 AU
direct	3649 Jan 25 19:25	24° $\text{♄}$ 55'27		direct	3655 Apr 18 00:37	17° $\text{♄}$ 18'18	
	3649 Apr 15 02:16	0° $\text{♄}$		evening set	3655 Aug 01 04:08	25° $\text{♄}$ 27'54	
evening set	3649 May 06 22:22	2° $\text{♄}$ 35'43					
				conjunction	3655 Aug 19 06:49	27° $\text{♄}$ 47'00	0°43'57
conjunction	3649 May 24 09:10	4° $\text{♄}$ 47'18	-1°-57'-7	minimum elong	3655 Aug 19 06:47	27° $\text{♄}$ 46'59	0°43'57
minimum elong	3649 May 24 09:13	4° $\text{♄}$ 47'19	1°57'08	max. Earth dist.	3655 Aug 19 07:49	27° $\text{♄}$ 47'19	10.11974 AU
max. Earth dist.	3649 May 24 10:03	4° $\text{♄}$ 47'34	10.32804 AU		3655 Sep 05 14:16	0° $\text{♄}$	
morning rise	3649 Jun 11 00:17	7° $\text{♄}$ 00'16		morning rise	3655 Sep 06 08:13	0° $\text{♄}$ 05'40	
retrograde	3649 Sep 25 12:38	15° $\text{♄}$ 04'25		retrograde	3655 Dec 18 22:17	8° $\text{♄}$ 08'31	
opposition	3649 Dec 03 05:32	11° $\text{♄}$ 36'26	-2°-15'-36	opposition	3656 Feb 23 15:55	4° $\text{♄}$ 41'36	1°12'47
min. Earth dist.	3649 Dec 03 04:48	11° $\text{♄}$ 36'35	8.28575 AU	min. Earth dist.	3656 Feb 23 14:34	4° $\text{♄}$ 41'53	8.13980 AU
direct	3650 Feb 08 02:57	8° $\text{♄}$ 12'22		direct	3656 May 01 08:05	1° $\text{♄}$ 12'21	
evening set	3650 May 20 19:58	15° $\text{♄}$ 59'49		evening set	3656 Aug 14 23:45	9° $\text{♄}$ 21'30	
conjunction	3650 Jun 07 11:39	18° $\text{♄}$ 13'58	-1°-40'-6	conjunction	3656 Sep 02 00:25	11° $\text{♄}$ 39'18	1°12'13
minimum elong	3650 Jun 07 11:42	18° $\text{♄}$ 13'59	1°40'08	minimum elong	3656 Sep 02 00:22	11° $\text{♄}$ 39'17	1°12'13
max. Earth dist.	3650 Jun 07 13:00	18° $\text{♄}$ 14'24	10.24458 AU	max. Earth dist.	3656 Sep 02 01:46	11° $\text{♄}$ 39'44	10.16470 AU
morning rise	3650 Jun 25 07:03	20° $\text{♄}$ 29'20		morning rise	3656 Sep 19 22:34	13° $\text{♄}$ 56'19	
retrograde	3650 Oct 09 17:19	28° $\text{♄}$ 37'59		retrograde	3656 Dec 31 18:31	21° $\text{♄}$ 53'08	
opposition	3650 Dec 16 22:57	25° $\text{♄}$ 09'30	-1°-50'-54	opposition	3657 Mar 08 11:37	18° $\text{♄}$ 27'12	1°45'17
min. Earth dist.	3650 Dec 16 21:41	25° $\text{♄}$ 09'46	8.20862 AU	min. Earth dist.	3657 Mar 08 09:58	18° $\text{♄}$ 27'32	8.19534 AU
direct	3651 Feb 21 16:53	21° $\text{♄}$ 44'15		direct	3657 May 15 13:57	14° $\text{♄}$ 57'57	
evening set	3651 Jun 04 01:43	29° $\text{♄}$ 38'28		evening set	3657 Aug 29 14:46	23° $\text{♄}$ 04'48	
	3651 Jun 06 22:01	0° $\text{♄}$					
conjunction	3651 Jun 21 21:53	1° $\text{♄}$ 54'55	-1°-17'-15	conjunction	3657 Sep 16 12:11	25° $\text{♄}$ 20'41	1°36'04
minimum elong	3651 Jun 21 21:56	1° $\text{♄}$ 54'56	1°17'17	minimum elong	3657 Sep 16 12:08	25° $\text{♄}$ 20'40	1°36'04
max. Earth dist.	3651 Jun 21 23:35	1° $\text{♄}$ 55'28	10.17574 AU	max. Earth dist.	3657 Sep 16 13:44	25° $\text{♄}$ 21'11	10.22938 AU
morning rise	3651 Jul 09 21:02	4° $\text{♄}$ 12'21		morning rise	3657 Oct 04 06:05	27° $\text{♄}$ 35'31	
retrograde	3651 Oct 24 01:08	12° $\text{♄}$ 23'44			3657 Oct 24 06:07	0° $\text{♄}$	
opposition	3651 Dec 30 19:35	8° $\text{♄}$ 55'01	-1°-19'-28	retrograde	3658 Jan 14 09:14	5° $\text{♄}$ 25'25	
min. Earth dist.	3651 Dec 30 17:59	8° $\text{♄}$ 55'20	8.14870 AU	opposition	3658 Mar 22 03:57	2° $\text{♄}$ 00'36	2°11'22
direct	3652 Mar 06 11:50	5° $\text{♄}$ 28'36		min. Earth dist.	3658 Mar 22 02:36	2° $\text{♄}$ 00'52	8.26879 AU
evening set	3652 Jun 17 14:37	13° $\text{♄}$ 28'45			3658 Apr 17 18:14	30° $\text{♄}$	
				direct	3658 May 29 17:19	28° $\text{♄}$ 31'40	
conjunction	3652 Jul 05 14:28	15° $\text{♄}$ 47'00	0°-49'-41		3658 Jul 10 08:20	0° $\text{♄}$	
minimum elong	3652 Jul 05 14:31	15° $\text{♄}$ 47'01	0°49'43	evening set	3658 Sep 12 22:54	6° $\text{♄}$ 34'31	
max. Earth dist.	3652 Jul 05 15:57	15° $\text{♄}$ 47'29	10.12639 AU				
morning rise	3652 Jul 23 16:29	18° $\text{♄}$ 05'57		conjunction	3658 Sep 30 16:17	8° $\text{♄}$ 48'05	1°54'16
retrograde	3652 Nov 06 10:08	26° $\text{♄}$ 18'02		minimum elong	3658 Sep 30 16:14	8° $\text{♄}$ 48'04	1°54'16
opposition	3653 Jan 12 18:22	22° $\text{♄}$ 49'22	0°-43'-1	max. Earth dist.	3658 Sep 30 17:31	8° $\text{♄}$ 48'29	10.30993 AU
min. Earth dist.	3653 Jan 12 17:03	22° $\text{♄}$ 49'38	8.11020 AU	morning rise	3658 Oct 18 05:31	11° $\text{♄}$ 00'26	
direct	3653 Mar 20 11:47	19° $\text{♄}$ 21'53		retrograde	3659 Jan 27 16:15	18° $\text{♄}$ 42'55	
evening set	3653 Jul 02 08:54	27° $\text{♄}$ 26'48		opposition	3659 Apr 04 16:22	15° $\text{♄}$ 19'18	2°29'48
				min. Earth dist.	3659 Apr 04 15:40	15° $\text{♄}$ 19'26	8.35589 AU
conjunction	3653 Jul 20 11:15	29° $\text{♄}$ 46'10	0°-19'-1	direct	3659 Jun 12 17:49	11° $\text{♄}$ 50'58	
minimum elong	3653 Jul 20 11:16	29° $\text{♄}$ 46'10	0°19'03	evening set	3659 Sep 26 22:28	19° $\text{♄}$ 48'22	
max. Earth dist.	3653 Jul 20 12:22	29° $\text{♄}$ 46'31	10.09981 AU				
	3653 Jul 22 06:06	0° $\text{♄}$		conjunction	3659 Oct 14 11:31	21° $\text{♄}$ 59'27	2°06'04
morning rise	3653 Aug 07 14:44	2° $\text{♄}$ 05'52		minimum elong	3659 Oct 14 11:30	21° $\text{♄}$ 59'26	2°06'04
retrograde	3653 Nov 20 18:09	10° $\text{♄}$ 16'38		max. Earth dist.	3659 Oct 14 11:58	21° $\text{♄}$ 59'35	10.40180 AU
opposition	3654 Jan 26 18:13	6° $\text{♄}$ 48'19	0°-3'-48	morning rise	3659 Oct 31 20:14	24° $\text{♄}$ 09'12	
min. Earth dist.	3654 Jan 26 17:11	6° $\text{♄}$ 48'31	8.09561 AU		3659 Dec 27 04:48	0° $\text{♄}$	
asc. node	3654 Mar 04 02:21	4° $\text{♄}$ 10'42		retrograde	3660 Feb 09 17:01	1° $\text{♄}$ 44'11	
direct	3654 Apr 03 16:46	3° $\text{♄}$ 19'57			3660 Mar 26 09:06	30° $\text{♄}$	
evening set	3654 Jul 17 06:17	11° $\text{♄}$ 28'07		opposition	3660 Apr 17 00:17	28° $\text{♄}$ 21'48	2°40'02
				min. Earth dist.	3660 Apr 17 00:20	28° $\text{♄}$ 21'47	8.45174 AU
conjunction	3654 Aug 04 09:35	13° $\text{♄}$ 47'46	0°12'55	direct	3660 Jun 25 13:02	24° $\text{♄}$ 54'19	
minimum elong	3654 Aug 04 09:34	13° $\text{♄}$ 47'45	0°12'55		3660 Sep 15 20:08	0° $\text{♄}$	
behind sun begin	3654 Aug 04 05:13	13° $\text{♄}$ 46'22		evening set	3660 Oct 09 12:54	2° $\text{♄}$ 45'15	
behind sun end	3654 Aug 04 13:56	13° $\text{♄}$ 49'09					
				conjunction	3660 Oct 26 21:45	4° $\text{♄}$ 53'50	2°11'14



minimum elong	3660 Oct 26 21:45	4°♄53'50	2°11'14	morning rise	3667 Jan 24 06:03	19°♄07'34	
max. Earth dist.	3660 Oct 26 21:08	4°♄53'39	10.50002 AU	retrograde	3667 May 04 13:57	26°♄10'30	
morning rise	3660 Nov 13 02:18	7°♄01'06		opposition	3667 Jul 13 15:09	22°♄52'47	0°42'55
retrograde	3661 Feb 21 11:40	14°♄28'48		min. Earth dist.	3667 Jul 13 15:42	22°♄52'41	8.98518 AU
opposition	3661 Apr 30 03:29	11°♄07'35	2°42'04	direct	3667 Sep 22 12:54	19°♄33'04	
min. Earth dist.	3661 Apr 30 03:34	11°♄07'34	8.55128 AU	evening set	3668 Jan 02 09:59	26°♄40'19	
direct	3661 Jul 09 02:33	7°♄41'11					
	3661 Oct 19 06:23	15°♄		conjunction	3668 Jan 19 03:01	28°♄38'27	0°22'08
evening set	3661 Oct 22 17:47	15°♄24'59		minimum elong	3668 Jan 19 03:01	28°♄38'27	0°22'09
				max. Earth dist.	3668 Jan 19 02:02	28°♄38'09	10.99576 AU
					3668 Jan 30 14:35	0°♄	
conjunction	3661 Nov 08 22:53	17°♄31'13	2°09'52	morning rise	3668 Feb 04 18:57	0°♄36'19	
minimum elong	3661 Nov 08 22:54	17°♄31'13	2°09'53	retrograde	3668 May 15 13:54	7°♄39'36	
max. Earth dist.	3661 Nov 08 22:08	17°♄30'59	10.59963 AU	opposition	3668 Jul 24 21:18	4°♄21'37	0°11'03
morning rise	3661 Nov 25 23:46	19°♄36'11		min. Earth dist.	3668 Jul 24 22:21	4°♄21'26	9.00128 AU
retrograde	3662 Mar 06 00:11	26°♄57'12		direct	3668 Oct 03 15:17	1°♄02'32	
opposition	3662 May 13 02:16	23°♄37'03	2°36'18	desc. node	3668 Dec 01 02:04	3°♄41'27	
min. Earth dist.	3662 May 13 02:03	23°♄37'05	8.64964 AU	evening set	3669 Jan 12 22:28	8°♄07'10	
direct	3662 Jul 22 10:54	20°♄11'52					
evening set	3662 Nov 04 13:17	27°♄48'14		conjunction	3669 Jan 29 14:40	10°♄05'02	0°-4'-13
				minimum elong	3669 Jan 29 14:40	10°♄05'02	0°04'14
conjunction	3662 Nov 21 15:14	29°♄52'22	2°02'28	behind sun begin	3669 Jan 29 07:48	10°♄03'02	
minimum elong	3662 Nov 21 15:16	29°♄52'22	2°02'28	behind sun end	3669 Jan 29 21:33	10°♄07'03	
max. Earth dist.	3662 Nov 21 14:58	29°♄52'17	10.69583 AU	max. Earth dist.	3669 Jan 29 12:41	10°♄04'30	11.00144 AU
	3662 Nov 22 16:15	0°♄		morning rise	3669 Feb 15 06:48	12°♄02'54	
morning rise	3662 Dec 08 13:04	1°♄55'19			3669 Mar 14 06:05	15°♄	
retrograde	3663 Mar 18 09:59	9°♄10'27		retrograde	3669 May 27 14:07	19°♄08'00	
opposition	3663 May 25 20:51	5°♄51'13	2°23'31	opposition	3669 Aug 06 03:24	15°♄49'32	0°-21'-11
min. Earth dist.	3663 May 25 20:41	5°♄51'15	8.74227 AU	min. Earth dist.	3669 Aug 06 05:19	15°♄49'11	8.99630 AU
direct	3663 Aug 04 12:08	2°♄27'18			3669 Aug 17 09:58	15°♄	
evening set	3663 Nov 17 00:37	9°♄56'23		direct	3669 Oct 15 14:42	12°♄30'52	
					3669 Dec 10 22:57	15°♄	
conjunction	3663 Dec 03 23:53	11°♄58'43	1°49'41	evening set	3670 Jan 24 10:51	19°♄34'20	
minimum elong	3663 Dec 03 23:55	11°♄58'43	1°49'41				
max. Earth dist.	3663 Dec 03 23:42	11°♄58'39	10.78429 AU	conjunction	3670 Feb 10 02:41	21°♄32'18	0°-30'-19
morning rise	3663 Dec 20 19:23	13°♄59'58		minimum elong	3670 Feb 10 02:40	21°♄32'17	0°30'19
retrograde	3664 Mar 29 14:51	21°♄10'09		max. Earth dist.	3670 Feb 09 23:48	21°♄31'26	10.98576 AU
opposition	3664 Jun 06 11:32	17°♄51'41	2°04'41	morning rise	3670 Feb 26 19:23	23°♄30'30	
min. Earth dist.	3664 Jun 06 12:15	17°♄51'33	8.82519 AU		3670 May 11 10:15	0°♄	
direct	3664 Aug 16 06:28	14°♄28'59		retrograde	3670 Jun 08 16:22	0°♄38'56	
evening set	3664 Nov 28 04:43	21°♄51'18			3670 Jul 07 10:21	30°♄	
				opposition	3670 Aug 18 10:11	27°♄19'43	0°-52'-42
conjunction	3664 Dec 15 01:41	23°♄52'05	1°32'20	min. Earth dist.	3670 Aug 18 12:21	27°♄19'19	8.97024 AU
minimum elong	3664 Dec 15 01:43	23°♄52'06	1°32'19	direct	3670 Oct 27 15:04	24°♄01'14	
max. Earth dist.	3664 Dec 15 00:30	23°♄51'44	10.86132 AU		3671 Jan 26 14:08	0°♄	
morning rise	3664 Dec 31 19:37	25°♄52'01		evening set	3671 Feb 05 00:34	1°♄05'00	
	3665 Feb 08 15:06	0°♄					
retrograde	3665 Apr 10 15:03	2°♄58'27		conjunction	3671 Feb 21 16:35	3°♄03'24	0°-55'-21
	3665 Jun 14 14:58	30°♄		minimum elong	3671 Feb 21 16:33	3°♄03'24	0°55'23
opposition	3665 Jun 18 23:11	29°♄40'31	1°40'53	max. Earth dist.	3671 Feb 21 14:17	3°♄02'43	10.94947 AU
min. Earth dist.	3665 Jun 19 00:26	29°♄40'17	8.89508 AU	morning rise	3671 Mar 10 10:03	5°♄02'16	
direct	3665 Aug 28 21:08	26°♄18'56		retrograde	3671 Jun 21 00:28	12°♄15'22	
	3665 Nov 06 22:57	0°♄		opposition	3671 Aug 30 18:39	8°♄55'11	-1°-22'-21
evening set	3665 Dec 10 02:36	3°♄35'13		min. Earth dist.	3671 Aug 30 20:04	8°♄54'55	8.92446 AU
				direct	3671 Nov 08 15:28	5°♄36'40	
conjunction	3665 Dec 26 21:46	5°♄34'47	1°11'20	evening set	3672 Feb 16 17:10	12°♄42'03	
minimum elong	3665 Dec 26 21:48	5°♄34'48	1°11'19				
max. Earth dist.	3665 Dec 26 20:05	5°♄34'17	10.92386 AU	conjunction	3672 Mar 04 09:41	14°♄41'14	-1°-18'-21
morning rise	3666 Jan 12 14:42	7°♄33'42		minimum elong	3672 Mar 04 09:38	14°♄41'13	1°18'22
retrograde	3666 Apr 22 15:11	14°♄37'43		max. Earth dist.	3672 Mar 04 07:58	14°♄40'43	10.89440 AU
opposition	3666 Jul 01 08:12	11°♄20'01	1°13'14	morning rise	3672 Mar 21 04:14	16°♄41'05	
min. Earth dist.	3666 Jul 01 09:12	11°♄19'50	8.94917 AU	retrograde	3672 Jul 02 12:06	24°♄00'00	
direct	3666 Sep 10 07:50	7°♄59'28		opposition	3672 Sep 11 05:39	20°♄38'40	-1°-48'-57
evening set	3666 Dec 21 19:51	15°♄10'38		min. Earth dist.	3672 Sep 11 06:38	20°♄38'29	8.86121 AU
				direct	3672 Nov 19 15:22	17°♄19'52	
conjunction	3667 Jan 07 13:48	17°♄09'20	0°47'36	evening set	3673 Feb 27 14:01	24°♄28'11	
minimum elong	3667 Jan 07 13:49	17°♄09'21	0°47'37				
max. Earth dist.	3667 Jan 07 12:36	17°♄08'59	10.96938 AU				



conjunction	3673 Mar 16 07:24	26° <del>✕</del> 28'28	-1°-38'-19	conjunction	3679 Jun 01 09:23	12° <del>II</del> 19'08	-1°-48'-42
minimum elong	3673 Mar 16 07:22	26° <del>✕</del> 28'27	1°38'20	minimum elong	3679 Jun 01 09:26	12° <del>II</del> 19'09	1°48'44
max. Earth dist.	3673 Mar 16 05:28	26° <del>✕</del> 27'53	10.82323 AU	max. Earth dist.	3679 Jun 01 09:59	12° <del>II</del> 19'19	10.26057 AU
morning rise	3673 Apr 02 03:43	28° <del>✕</del> 29'39		morning rise	3679 Jun 19 03:00	14° <del>II</del> 33'41	
	3673 Apr 15 04:33	0° <del>Y</del>		retrograde	3679 Oct 03 14:46	22° <del>II</del> 41'18	
retrograde	3673 Jul 15 04:54	5° <del>Y</del> 55'17		opposition	3679 Dec 11 01:52	19° <del>II</del> 12'23	-2°-3'-13
opposition	3673 Sep 23 19:55	2° <del>Y</del> 32'41	-2°-11'-22	min. Earth dist.	3679 Dec 11 00:57	19° <del>II</del> 12'34	8.22225 AU
min. Earth dist.	3673 Sep 23 21:03	2° <del>Y</del> 32'28	8.78336 AU	direct	3680 Feb 15 21:08	15° <del>II</del> 47'03	
	3673 Nov 01 02:55	30° <del>R</del>		evening set	3680 May 27 22:12	23° <del>II</del> 39'01	
direct	3673 Dec 01 19:09	29° <del>✕</del> 13'22					
	3673 Dec 31 22:36	0° <del>Y</del>		conjunction	3680 Jun 14 16:19	25° <del>II</del> 54'41	-1°-28'-23
evening set	3674 Mar 11 16:08	6° <del>Y</del> 25'48		minimum elong	3680 Jun 14 16:23	25° <del>II</del> 54'42	1°28'25
				max. Earth dist.	3680 Jun 14 17:29	25° <del>II</del> 55'03	10.18647 AU
conjunction	3674 Mar 28 11:05	8° <del>Y</del> 27'32	-1°-54'-20	morning rise	3680 Jul 02 14:06	28° <del>II</del> 11'29	
minimum elong	3674 Mar 28 11:03	8° <del>Y</del> 27'32	1°54'21		3680 Jul 17 08:13	0° <del>☾</del>	
max. Earth dist.	3674 Mar 28 09:00	8° <del>Y</del> 26'54	10.73901 AU	retrograde	3680 Oct 16 21:18	6° <del>☾</del> 22'38	
morning rise	3674 Apr 14 09:44	10° <del>Y</del> 30'23		opposition	3680 Dec 23 21:33	2° <del>☾</del> 53'26	-1°-34'-37
retrograde	3674 Jul 28 03:20	18° <del>Y</del> 03'26		min. Earth dist.	3680 Dec 23 20:19	2° <del>☾</del> 53'41	8.15644 AU
opposition	3674 Oct 06 13:52	14° <del>Y</del> 39'31	-2°-28'-25		3681 Feb 04 02:21	30° <del>R</del> <del>II</del>	
min. Earth dist.	3674 Oct 06 15:08	14° <del>Y</del> 39'17	8.69409 AU	direct	3681 Feb 28 14:24	29° <del>II</del> 27'01	
direct	3674 Dec 14 02:05	11° <del>Y</del> 19'28			3681 Mar 24 22:31	0° <del>☾</del>	
evening set	3675 Mar 24 00:46	18° <del>Y</del> 37'08		evening set	3681 Jun 11 08:17	7° <del>☾</del> 25'18	
conjunction	3675 Apr 09 22:06	20° <del>Y</del> 40'40	-2°-5'-29	conjunction	3681 Jun 29 06:40	9° <del>☾</del> 43'01	-1°-2'-46
minimum elong	3675 Apr 09 22:04	20° <del>Y</del> 40'40	2°05'30	minimum elong	3681 Jun 29 06:43	9° <del>☾</del> 43'02	1°02'48
max. Earth dist.	3675 Apr 09 20:57	20° <del>Y</del> 40'19	10.64515 AU	max. Earth dist.	3681 Jun 29 08:45	9° <del>☾</del> 43'41	10.13058 AU
morning rise	3675 Apr 26 23:28	22° <del>Y</del> 45'28		morning rise	3681 Jul 17 07:43	12° <del>☾</del> 01'35	
	3675 Jul 18 09:19	0° <del>☾</del>		retrograde	3681 Oct 31 06:11	16° <del>☾</del> 14'20	
retrograde	3675 Aug 10 07:01	0° <del>☾</del> 26'19		opposition	3682 Jan 06 19:43	16° <del>☾</del> 45'11	-1°00'-9
	3675 Sep 02 09:47	30° <del>R</del> <del>Y</del>		min. Earth dist.	3682 Jan 06 17:44	16° <del>☾</del> 45'35	8.11081 AU
opposition	3675 Oct 19 11:54	27° <del>Y</del> 01'05	-2°-39'-3	direct	3682 Mar 14 12:48	13° <del>☾</del> 17'49	
min. Earth dist.	3675 Oct 19 12:28	27° <del>Y</del> 00'59	8.59708 AU	evening set	3682 Jun 26 00:43	21° <del>☾</del> 21'26	
direct	3675 Dec 26 14:21	23° <del>Y</del> 40'10					
	3676 Mar 26 18:55	0° <del>☾</del>		conjunction	3682 Jul 14 02:18	23° <del>☾</del> 40'34	0°-33'-14
evening set	3676 Apr 04 16:50	1° <del>☾</del> 03'58		minimum elong	3682 Jul 14 02:20	23° <del>☾</del> 40'35	0°33'16
				max. Earth dist.	3682 Jul 14 05:14	23° <del>☾</del> 41'31	10.09648 AU
conjunction	3676 Apr 21 17:19	3° <del>☾</del> 09'38	-2°-10'-59	morning rise	3682 Aug 01 05:20	26° <del>☾</del> 00'14	
minimum elong	3676 Apr 21 17:19	3° <del>☾</del> 09'38	2°11'00		3682 Sep 04 03:21	0° <del>♈</del>	
max. Earth dist.	3676 Apr 21 17:24	3° <del>☾</del> 09'40	10.54570 AU	retrograde	3682 Nov 14 15:29	4° <del>♈</del> 12'35	
morning rise	3676 May 08 21:59	5° <del>☾</del> 16'39		opposition	3683 Jan 20 19:40	0° <del>♈</del> 43'49	0°-21'-48
retrograde	3676 Aug 22 18:42	13° <del>☾</del> 05'20		min. Earth dist.	3683 Jan 20 17:02	0° <del>♈</del> 44'21	8.08841 AU
opposition	3676 Oct 31 14:34	9° <del>☾</del> 38'52	-2°-42'-19		3683 Jan 29 18:22	30° <del>R</del> <del>☾</del>	
min. Earth dist.	3676 Oct 31 14:06	9° <del>☾</del> 38'57	8.49661 AU	direct	3683 Mar 28 15:43	27° <del>☾</del> 15'43	
direct	3677 Jan 07 07:10	6° <del>☾</del> 16'58			3683 May 23 20:13	0° <del>♈</del>	
evening set	3677 Apr 17 17:03	13° <del>☾</del> 47'29		evening set	3683 Jul 10 21:20	5° <del>♈</del> 23'14	
	3677 Apr 27 11:30	15° <del>☾</del>					
				conjunction	3683 Jul 29 00:37	7° <del>♈</del> 43'02	0°-1'-38
conjunction	3677 May 04 21:21	15° <del>☾</del> 55'34	-2°-10'-13	minimum elong	3683 Jul 29 00:37	7° <del>♈</del> 43'02	0°01'40
minimum elong	3677 May 04 21:22	15° <del>☾</del> 55'35	2°10'13	behind sun begin	3683 Jul 28 17:15	7° <del>♈</del> 40'40	
max. Earth dist.	3677 May 04 22:05	15° <del>☾</del> 55'48	10.44519 AU	behind sun end	3683 Jul 29 07:58	7° <del>♈</del> 45'23	
morning rise	3677 May 22 06:01	18° <del>☾</del> 05'03		max. Earth dist.	3683 Jul 29 03:57	7° <del>♈</del> 44'03	10.08651 AU
retrograde	3677 Sep 05 13:05	26° <del>☾</del> 01'05		morning rise	3683 Aug 16 04:06	10° <del>♈</del> 02'57	
opposition	3677 Nov 13 21:55	22° <del>☾</del> 33'33	-2°-37'-34	asc. node	3683 Aug 17 00:04	10° <del>♈</del> 09'16	
min. Earth dist.	3677 Nov 13 20:51	22° <del>☾</del> 33'46	8.39730 AU		3683 Sep 28 12:11	15° <del>♈</del>	
direct	3678 Jan 20 04:32	19° <del>☾</del> 10'33		retrograde	3683 Nov 28 22:44	18° <del>♈</del> 12'58	
evening set	3678 May 01 02:10	26° <del>☾</del> 48'16			3684 Jan 31 18:41	15° <del>R</del> <del>♈</del>	
				opposition	3684 Feb 03 20:07	14° <del>♈</del> 44'53	0°17'55
conjunction	3678 May 18 10:49	28° <del>☾</del> 58'54	-2°-2'-47	min. Earth dist.	3684 Feb 03 17:23	14° <del>♈</del> 45'27	8.09089 AU
minimum elong	3678 May 18 10:51	28° <del>☾</del> 58'55	2°02'48	direct	3684 Apr 10 21:48	11° <del>♈</del> 16'16	
max. Earth dist.	3678 May 18 11:20	28° <del>☾</del> 59'04	10.34846 AU		3684 Jun 16 15:32	15° <del>♈</del>	
	3678 May 26 12:33	0° <del>II</del>		evening set	3684 Jul 24 20:03	19° <del>♈</del> 26'02	
morning rise	3678 Jun 04 23:55	1° <del>II</del> 10'58					
retrograde	3678 Sep 19 12:17	9° <del>II</del> 13'26		conjunction	3684 Aug 11 23:21	21° <del>♈</del> 45'39	0°30'09
opposition	3678 Nov 27 09:44	5° <del>II</del> 45'04	-2°-24'-28	minimum elong	3684 Aug 11 23:20	21° <del>♈</del> 45'38	0°30'08
min. Earth dist.	3678 Nov 27 08:48	5° <del>II</del> 45'15	8.30414 AU	max. Earth dist.	3684 Aug 12 02:33	21° <del>♈</del> 46'40	10.10147 AU
direct	3679 Feb 02 08:59	2° <del>II</del> 20'54		morning rise	3684 Aug 30 01:43	24° <del>♈</del> 04'58	
evening set	3679 May 14 20:02	10° <del>II</del> 05'54			3684 Oct 23 08:22	0° <del>♐</del>	



retrograde	3684 Dec 12 02:47	2°♑10'50		min. Earth dist.	3691 May 07 21:22	18°♑26'41	8.60707 AU
	3685 Jan 31 22:26	30°♑♌		direct	3691 Jul 16 23:02	15°♑01'28	
opposition	3685 Feb 16 19:41	28°♑43'42	0°56'28	evening set	3691 Oct 30 09:35	22°♑41'35	
min. Earth dist.	3685 Feb 16 17:24	28°♑44'10	8.11817 AU				
direct	3685 Apr 25 05:02	25°♑14'47		conjunction	3691 Nov 16 12:53	24°♑46'43	2°06'14
	3685 Jul 11 01:13	0°♑		minimum elong	3691 Nov 16 12:54	24°♑46'43	2°06'15
evening set	3685 Aug 08 17:59	3°♑24'57		max. Earth dist.	3691 Nov 16 10:54	24°♑46'06	10.65211 AU
				morning rise	3691 Dec 03 12:04	26°♑50'37	
conjunction	3685 Aug 26 19:43	5°♑43'32	0°59'56		3691 Dec 31 10:29	0°♑	
minimum elong	3685 Aug 26 19:40	5°♑43'31	0°59'55	retrograde	3692 Mar 12 11:13	4°♑08'43	
max. Earth dist.	3685 Aug 26 22:12	5°♑44'20	10.14035 AU	opposition	3692 May 19 17:12	0°♑49'18	2°29'42
morning rise	3685 Sep 13 19:28	8°♑01'28		min. Earth dist.	3692 May 19 18:58	0°♑48'58	8.69809 AU
retrograde	3685 Dec 26 02:08	16°♑01'41			3692 May 30 12:55	30°♑♑	
opposition	3686 Mar 02 17:25	12°♑35'38	1°31'20	direct	3692 Jul 29 04:41	27°♑24'54	
min. Earth dist.	3686 Mar 02 15:44	12°♑35'59	8.16841 AU		3692 Sep 24 17:03	0°♑	
direct	3686 May 09 12:54	9°♑06'44		evening set	3692 Nov 11 01:16	4°♑57'48	
evening set	3686 Aug 23 12:08	17°♑15'17					
				conjunction	3692 Nov 28 01:36	7°♑01'01	1°55'41
conjunction	3686 Sep 10 10:57	19°♑32'08	1°25'58	minimum elong	3692 Nov 28 01:38	7°♑01'02	1°55'41
minimum elong	3686 Sep 10 10:54	19°♑32'07	1°25'58	max. Earth dist.	3692 Nov 27 23:00	7°♑00'14	10.73968 AU
max. Earth dist.	3686 Sep 10 12:38	19°♑32'40	10.20055 AU	morning rise	3692 Dec 14 22:16	9°♑03'08	
morning rise	3686 Sep 28 06:57	21°♑48'04		retrograde	3693 Mar 24 17:27	16°♑15'58	
retrograde	3687 Jan 08 19:00	29°♑41'32		opposition	3693 Jun 01 10:13	12°♑57'11	2°13'22
opposition	3687 Mar 16 12:04	26°♑16'39	2°00'29	min. Earth dist.	3693 Jun 01 11:43	12°♑56'54	8.78090 AU
min. Earth dist.	3687 Mar 16 10:33	26°♑16'57	8.23815 AU	direct	3693 Aug 11 04:00	9°♑33'51	
direct	3687 May 23 19:36	22°♑48'00		evening set	3693 Nov 23 08:58	16°♑59'46	
	3687 Aug 30 19:28	0°♑					
evening set	3687 Sep 07 00:12	0°♑53'05		conjunction	3693 Dec 10 07:01	19°♑01'23	1°40'11
				minimum elong	3693 Dec 10 07:03	19°♑01'23	1°40'11
conjunction	3687 Sep 24 19:19	3°♑07'43	1°46'49	max. Earth dist.	3693 Dec 10 04:55	19°♑00'45	10.81742 AU
minimum elong	3687 Sep 24 19:16	3°♑07'42	1°46'49	morning rise	3693 Dec 27 01:42	21°♑02'02	
max. Earth dist.	3687 Sep 24 20:29	3°♑08'05	10.27797 AU	retrograde	3694 Apr 05 20:53	28°♑10'40	
morning rise	3687 Oct 12 10:51	5°♑21'13		opposition	3694 Jun 13 23:44	24°♑52'18	1°51'33
retrograde	3688 Jan 22 04:41	13°♑07'14		min. Earth dist.	3694 Jun 14 00:53	24°♑52'05	8.85221 AU
opposition	3688 Mar 29 02:38	9°♑43'33	2°22'26	direct	3694 Aug 23 21:48	21°♑29'58	
min. Earth dist.	3688 Mar 29 01:17	9°♑43'49	8.32247 AU	evening set	3694 Dec 05 09:50	28°♑49'30	
direct	3688 Jun 05 23:07	6°♑15'24			3694 Dec 15 07:45	0°♑	
evening set	3688 Sep 20 04:21	14°♑15'29					
				conjunction	3694 Dec 22 06:03	0°♑49'48	1°20'38
conjunction	3688 Oct 07 19:22	16°♑27'39	2°01'31	minimum elong	3694 Dec 22 06:05	0°♑49'49	1°20'37
minimum elong	3688 Oct 07 19:20	16°♑27'38	2°01'31	max. Earth dist.	3694 Dec 22 04:27	0°♑49'20	10.88216 AU
max. Earth dist.	3688 Oct 07 20:00	16°♑27'51	10.36710 AU	morning rise	3695 Jan 07 23:23	2°♑49'19	
morning rise	3688 Oct 25 06:11	18°♑38'33		retrograde	3695 Apr 17 23:00	9°♑54'59	
retrograde	3689 Feb 03 09:31	26°♑16'58		opposition	3695 Jun 26 10:20	6°♑36'49	1°25'24
opposition	3689 Apr 11 12:55	22°♑54'28	2°36'20	min. Earth dist.	3695 Jun 26 11:54	6°♑36'31	8.90922 AU
min. Earth dist.	3689 Apr 11 12:02	22°♑54'38	8.41538 AU	direct	3695 Sep 05 09:12	3°♑15'23	
direct	3689 Jun 19 20:27	19°♑27'03		evening set	3695 Dec 17 05:33	10°♑29'26	
evening set	3689 Oct 03 23:26	27°♑21'03					
				conjunction	3696 Jan 03 00:10	12°♑28'44	0°57'56
conjunction	3689 Oct 21 10:15	29°♑30'45	2°09'37	minimum elong	3696 Jan 03 00:12	12°♑28'44	0°57'55
minimum elong	3689 Oct 21 10:14	29°♑30'44	2°09'37	max. Earth dist.	3696 Jan 02 22:01	12°♑28'05	10.93141 AU
max. Earth dist.	3689 Oct 21 10:24	29°♑30'47	10.46203 AU	morning rise	3696 Jan 19 16:45	14°♑27'28	
	3689 Oct 25 08:03	0°♑		retrograde	3696 Apr 28 20:45	21°♑31'27	
morning rise	3689 Nov 07 16:31	1°♑39'05		opposition	3696 Jul 07 18:37	18°♑13'16	0°56'02
retrograde	3690 Feb 16 08:26	9°♑10'11		min. Earth dist.	3696 Jul 07 20:46	18°♑12'52	8.94985 AU
opposition	3690 Apr 24 18:45	5°♑48'51	2°41'56	direct	3696 Sep 16 16:28	14°♑52'36	
min. Earth dist.	3690 Apr 24 18:51	5°♑48'50	8.51155 AU	evening set	3696 Dec 27 21:22	22°♑02'18	
direct	3690 Jul 03 12:13	2°♑22'23					
evening set	3690 Oct 17 09:11	10°♑09'38		conjunction	3697 Jan 13 14:45	24°♑00'54	0°33'03
				minimum elong	3697 Jan 13 14:46	24°♑00'54	0°33'04
conjunction	3690 Nov 03 16:02	12°♑16'57	2°11'04	max. Earth dist.	3697 Jan 13 12:04	24°♑00'06	10.96346 AU
minimum elong	3690 Nov 03 16:02	12°♑16'57	2°11'05	morning rise	3697 Jan 30 07:02	25°♑59'09	
max. Earth dist.	3690 Nov 03 15:19	12°♑16'44	10.55828 AU		3697 Mar 09 06:09	0°♑	
morning rise	3690 Nov 20 18:21	14°♑22'56		retrograde	3697 May 10 19:45	3°♑02'57	
	3690 Nov 25 21:49	15°♑			3697 Jul 16 14:01	30°♑♑	
retrograde	3691 Mar 01 00:26	21°♑47'12		opposition	3697 Jul 20 01:37	29°♑44'31	0°24'38
opposition	3691 May 07 20:08	18°♑26'55	2°39'31	min. Earth dist.	3697 Jul 20 03:24	29°♑44'11	8.97270 AU



direct	3697 Sep 28 22:04	26°☾24'31		opposition	3703 Oct 02 13:52	9°♊48'39	-2°-21'-55
	3697 Dec 06 18:03	0°♊		min. Earth dist.	3703 Oct 02 12:55	9°♊48'50	8.73418 AU
evening set	3698 Jan 08 10:36	3°♊31'03		direct	3703 Dec 10 06:55	6°♊29'07	
				evening set	3704 Mar 19 04:35	13°♊44'30	
conjunction	3698 Jan 25 03:17	5°♊29'16	0°07'00				
minimum elong	3698 Jan 25 03:17	5°♊29'16	0°07'01	conjunction	3704 Apr 05 00:48	15°♊47'12	-2°-1'-22
behind sun begin	3698 Jan 24 20:48	5°♊27'22		minimum elong	3704 Apr 05 00:46	15°♊47'11	2°01'23
behind sun end	3698 Jan 25 09:45	5°♊31'10		max. Earth dist.	3704 Apr 05 01:27	15°♊47'24	10.69007 AU
max. Earth dist.	3698 Jan 25 01:27	5°♊28'45	10.97711 AU	morning rise	3704 Apr 22 00:46	17°♊51'05	
morning rise	3698 Feb 10 19:29	7°♊27'22		retrograde	3704 Aug 05 04:04	25°♊28'32	
desc. node	3698 May 04 03:54	14°♊15'07		opposition	3704 Oct 14 10:22	22°♊04'07	-2°-35'-17
retrograde	3698 May 22 20:46	14°♊32'23		min. Earth dist.	3704 Oct 14 09:16	22°♊04'20	8.64638 AU
opposition	3698 Aug 01 07:58	11°♊13'31	0°-7'-38	direct	3704 Dec 21 15:37	18°♊43'59	
min. Earth dist.	3698 Aug 01 08:52	11°♊13'21	8.97683 AU	evening set	3705 Mar 31 17:33	26°♊04'53	
direct	3698 Oct 10 23:20	7°♊54'05					
evening set	3699 Jan 19 23:11	14°♊58'45		conjunction	3705 Apr 17 16:24	28°♊09'30	-2°-9'-17
	3699 Jan 20 03:29	15°♊		minimum elong	3705 Apr 17 16:24	28°♊09'30	2°09'18
				max. Earth dist.	3705 Apr 17 16:55	28°♊09'40	10.59890 AU
conjunction	3699 Feb 05 15:27	16°♊56'55	0°-19'-25		3705 May 02 16:35	0°♋	
minimum elong	3699 Feb 05 15:26	16°♊56'54	0°19'25	morning rise	3705 May 04 19:36	0°♋15'27	
max. Earth dist.	3699 Feb 05 14:22	16°♊56'36	10.97172 AU	retrograde	3705 Aug 18 12:05	8°♋00'28	
morning rise	3699 Feb 22 07:52	18°♊55'11		opposition	3705 Oct 27 11:10	4°♋34'59	-2°-41'-39
retrograde	3699 Jun 03 23:01	26°♊02'48		min. Earth dist.	3705 Oct 27 10:17	4°♋35'09	8.55310 AU
opposition	3699 Aug 13 14:31	22°♊43'20	0°-39'-39	direct	3706 Jan 03 06:39	1°♋14'02	
min. Earth dist.	3699 Aug 13 15:05	22°♊43'13	8.96200 AU	evening set	3706 Apr 13 14:17	8°♋41'11	
direct	3699 Oct 22 22:53	19°♊24'15					
evening set	3700 Jan 31 12:33	26°♊28'29		conjunction	3706 Apr 30 16:39	10°♋48'01	-2°-11'-9
				minimum elong	3706 Apr 30 16:40	10°♋48'02	2°11'10
conjunction	3700 Feb 17 04:33	28°♊26'53	0°-45'-3	max. Earth dist.	3706 Apr 30 17:29	10°♋48'17	10.50434 AU
minimum elong	3700 Feb 17 04:32	28°♊26'53	0°45'04	morning rise	3706 May 17 23:37	12°♋56'16	
max. Earth dist.	3700 Feb 17 03:10	28°♊26'29	10.94745 AU		3706 Jun 04 10:13	15°♋	
	3700 Mar 02 06:09	0°♋		retrograde	3706 Sep 01 02:34	20°♋48'33	
morning rise	3700 Mar 05 21:40	0°♋25'38		opposition	3706 Nov 09 16:25	17°♋22'04	-2°-40'-16
retrograde	3700 Jun 16 05:06	7°♋37'12		min. Earth dist.	3706 Nov 09 15:32	17°♋22'15	8.45836 AU
opposition	3700 Aug 25 22:35	4°♋16'59	-1°-10'-15		3706 Dec 13 02:46	15°♋	
min. Earth dist.	3700 Aug 25 23:32	4°♋16'48	8.92874 AU	direct	3707 Jan 16 02:47	14°♋00'09	
direct	3700 Nov 03 22:17	0°♋58'04			3707 Feb 18 13:14	15°♋	
evening set	3701 Feb 12 03:56	8°♋03'12		evening set	3707 Apr 26 19:17	21°♋34'02	
conjunction	3701 Feb 28 20:05	10°♋02'09	-1°-9'-2	conjunction	3707 May 14 01:52	23°♋43'17	-2°-6'-32
minimum elong	3701 Feb 28 20:03	10°♋02'09	1°09'03	minimum elong	3707 May 14 01:54	23°♋43'17	2°06'33
max. Earth dist.	3701 Feb 28 18:29	10°♋01'41	10.90523 AU	max. Earth dist.	3707 May 14 03:37	23°♋43'50	10.41043 AU
morning rise	3701 Mar 17 14:18	12°♋01'44		morning rise	3707 May 31 12:54	25°♋53'57	
retrograde	3701 Jun 28 13:29	19°♋18'29			3707 Jul 06 15:50	0°♌	
opposition	3701 Sep 07 08:45	15°♋57'19	-1°-38'-16	retrograde	3707 Sep 14 22:15	3°♌52'50	
min. Earth dist.	3701 Sep 07 09:33	15°♋57'10	8.87832 AU	opposition	3707 Nov 23 02:00	0°♌25'27	-2°-30'-40
direct	3701 Nov 15 22:17	12°♋38'23		min. Earth dist.	3707 Nov 23 00:36	0°♌25'44	8.36619 AU
evening set	3702 Feb 23 22:54	19°♋45'45			3707 Nov 28 10:29	30°♌	
				direct	3708 Jan 29 05:12	27°♌02'28	
conjunction	3702 Mar 12 15:52	21°♋45'37	-1°-30'-22		3708 Mar 28 00:15	0°♌	
minimum elong	3702 Mar 12 15:50	21°♋45'37	1°30'23	evening set	3708 May 09 08:53	4°♌43'17	
max. Earth dist.	3702 Mar 12 15:12	21°♋45'25	10.84662 AU				
morning rise	3702 Mar 29 11:29	23°♋46'18		conjunction	3708 May 26 20:09	6°♌55'04	-1°-55'-14
	3702 Jun 03 07:42	0°♍		minimum elong	3708 May 26 20:12	6°♌55'05	1°55'16
retrograde	3702 Jul 11 04:10	1°♍09'16		max. Earth dist.	3708 May 26 22:16	6°♌55'45	10.32127 AU
	3702 Aug 18 18:39	30°♍		morning rise	3708 Jun 13 11:33	9°♌08'13	
opposition	3702 Sep 19 21:30	27°♋47'04	-2°-2'-32	retrograde	3708 Sep 27 23:14	17°♌12'39	
min. Earth dist.	3702 Sep 19 21:30	27°♋47'04	8.81262 AU	opposition	3708 Dec 05 15:44	13°♌44'35	-2°-12'-49
direct	3702 Nov 28 02:24	24°♋27'55		min. Earth dist.	3708 Dec 05 14:01	13°♌44'56	8.28069 AU
	3703 Feb 21 17:23	0°♍		direct	3709 Feb 10 13:10	10°♌20'26	
evening set	3703 Mar 07 22:45	1°♍38'45		evening set	3709 May 23 07:00	18°♌08'14	
conjunction	3703 Mar 24 17:06	3°♍39'53	-1°-48'-7	conjunction	3709 Jun 09 23:03	20°♌22'32	-1°-37'-31
minimum elong	3703 Mar 24 17:04	3°♍39'52	1°48'08	minimum elong	3709 Jun 09 23:06	20°♌22'33	1°37'33
max. Earth dist.	3703 Mar 24 17:34	3°♍40'01	10.77389 AU	max. Earth dist.	3709 Jun 10 00:50	20°♌23'07	10.24115 AU
morning rise	3703 Apr 10 14:32	5°♍42'00		morning rise	3709 Jun 27 18:46	22°♌38'03	
retrograde	3703 Jul 24 01:38	13°♍11'57			3709 Sep 12 09:34	0°♎	



retrograde	3709 Oct 12 05:10	0°♄46'41		morning rise	3715 Sep 23 08:11	16°♄01'15	
	3709 Nov 11 02:29	30°♄11		retrograde	3716 Jan 04 03:26	23°♄57'15	
opposition	3709 Dec 19 09:16	27°♄18'12	-1°-47'-18	opposition	3716 Mar 10 20:07	20°♄31'30	1°48'33
min. Earth dist.	3709 Dec 19 07:40	27°♄18'32	8.20669 AU	min. Earth dist.	3716 Mar 10 18:37	20°♄31'48	8.20594 AU
direct	3710 Feb 24 01:59	23°♄52'53		direct	3716 May 17 23:10	17°♄02'23	
	3710 May 22 23:05	0°♄		evening set	3716 Sep 01 00:22	25°♄08'37	
evening set	3710 Jun 06 13:17	1°♄47'19					
conjunction	3710 Jun 24 09:41	4°♄03'52	-1°-14'-4	conjunction	3716 Sep 18 21:23	27°♄24'14	1°38'23
minimum elong	3710 Jun 24 09:44	4°♄03'53	1°14'06	minimum elong	3716 Sep 18 21:20	27°♄24'13	1°38'22
max. Earth dist.	3710 Jun 24 10:57	4°♄04'16	10.17528 AU	max. Earth dist.	3716 Sep 18 22:45	27°♄24'40	10.24032 AU
morning rise	3710 Jul 12 09:10	6°♄21'23		morning rise	3716 Oct 06 14:50	29°♄38'47	
retrograde	3710 Oct 26 12:57	14°♄32'29			3716 Oct 09 11:11	0°♄	
opposition	3711 Jan 02 05:50	11°♄03'51	-1°-15'-14	retrograde	3717 Jan 16 16:14	7°♄27'50	
min. Earth dist.	3711 Jan 02 04:35	11°♄04'06	8.14957 AU	opposition	3717 Mar 24 11:51	4°♄03'12	2°13'45
direct	3711 Mar 09 21:53	7°♄37'23		min. Earth dist.	3717 Mar 24 11:12	4°♄03'20	8.27997 AU
evening set	3711 Jun 21 02:21	15°♄37'40		direct	3717 Jun 01 02:38	0°♄34'22	
				evening set	3717 Sep 15 07:39	8°♄36'33	
conjunction	3711 Jul 09 02:21	17°♄55'56	0°-46'-6	conjunction	3717 Oct 03 00:32	10°♄49'50	1°55'50
minimum elong	3711 Jul 09 02:23	17°♄55'56	0°46'08	minimum elong	3717 Oct 03 00:29	10°♄49'50	1°55'50
max. Earth dist.	3711 Jul 09 03:15	17°♄56'13	10.12862 AU	max. Earth dist.	3717 Oct 03 00:54	10°♄49'57	10.32109 AU
morning rise	3711 Jul 27 04:34	20°♄14'53		morning rise	3717 Oct 20 13:26	13°♄01'54	
retrograde	3711 Nov 09 20:37	28°♄26'31		retrograde	3718 Jan 29 23:03	20°♄43'33	
opposition	3712 Jan 16 04:30	24°♄57'59	0°-38'-25	opposition	3718 Apr 06 23:40	17°♄20'06	2°31'15
min. Earth dist.	3712 Jan 16 03:33	24°♄58'10	8.11369 AU	min. Earth dist.	3718 Apr 06 23:38	17°♄20'07	8.36696 AU
direct	3712 Mar 22 23:18	21°♄30'30		direct	3718 Jun 15 01:51	13°♄51'52	
evening set	3712 Jul 04 20:30	29°♄35'23		evening set	3718 Sep 29 06:12	21°♄48'32	
	3712 Jul 08 02:09	0°♄					
conjunction	3712 Jul 22 22:56	1°♄54'41	0°-15'-15	conjunction	3718 Oct 16 18:48	23°♄59'21	2°06'52
minimum elong	3712 Jul 22 22:57	1°♄54'41	0°15'17	minimum elong	3718 Oct 16 18:46	23°♄59'20	2°06'53
behind sun begin	3712 Jul 22 21:05	1°♄54'06		max. Earth dist.	3718 Oct 16 18:21	23°♄59'12	10.41254 AU
behind sun end	3712 Jul 23 00:48	1°♄55'17		morning rise	3718 Nov 03 03:13	26°♄08'51	
max. Earth dist.	3712 Jul 22 23:57	1°♄55'00	10.10453 AU		3718 Dec 07 01:00	0°♄	
morning rise	3712 Aug 10 02:27	4°♄14'19		retrograde	3719 Feb 11 22:36	3°♄43'04	
retrograde	3712 Nov 23 02:52	12°♄24'30		opposition	3719 Apr 20 06:59	0°♄20'46	2°40'31
asc. node	3713 Jan 20 19:45	9°♄37'13		min. Earth dist.	3719 Apr 20 07:02	0°♄20'45	8.46209 AU
opposition	3713 Jan 29 04:03	8°♄56'20	0°00'53		3719 Apr 24 16:24	30°♄	
min. Earth dist.	3713 Jan 29 02:55	8°♄56'34	8.10147 AU	direct	3719 Jun 28 20:59	26°♄53'23	
direct	3713 Apr 06 04:23	5°♄28'03			3719 Aug 30 13:42	0°♄	
evening set	3713 Jul 19 17:43	13°♄36'00		evening set	3719 Oct 12 19:34	4°♄43'32	
	3713 Jul 30 16:57	15°♄					
conjunction	3713 Aug 06 21:03	15°♄55'31	0°16'37	conjunction	3719 Oct 30 04:08	6°♄51'54	2°11'16
minimum elong	3713 Aug 06 21:02	15°♄55'31	0°16'37	minimum elong	3719 Oct 30 04:07	6°♄51'54	2°11'16
max. Earth dist.	3713 Aug 06 22:21	15°♄55'57	10.10450 AU	max. Earth dist.	3719 Oct 30 03:20	6°♄51'39	10.50979 AU
morning rise	3713 Aug 25 00:07	18°♄14'58		morning rise	3719 Nov 16 08:23	8°♄58'56	
retrograde	3713 Dec 07 06:59	26°♄21'53			3720 Jan 15 04:53	15°♄	
opposition	3714 Feb 12 03:09	22°♄54'20	0°40'07	retrograde	3720 Feb 24 16:05	16°♄25'58	
min. Earth dist.	3714 Feb 12 01:40	22°♄54'38	8.11363 AU		3720 Apr 06 04:24	15°♄	
direct	3714 Apr 20 10:24	19°♄25'28		opposition	3720 May 02 09:32	13°♄04'47	2°41'37
evening set	3714 Aug 03 15:12	27°♄34'43		min. Earth dist.	3720 May 02 09:18	13°♄04'50	8.56033 AU
				direct	3720 Jul 11 10:31	9°♄38'28	
conjunction	3714 Aug 21 17:48	29°♄53'39	0°47'22		3720 Oct 04 15:15	15°♄	
minimum elong	3714 Aug 21 17:46	29°♄53'38	0°47'22	evening set	3720 Oct 24 23:33	17°♄21'31	
max. Earth dist.	3714 Aug 21 19:27	29°♄54'11	10.12848 AU				
	3714 Aug 22 13:32	0°♄		conjunction	3720 Nov 11 04:31	19°♄27'34	2°09'11
morning rise	3714 Sep 08 18:48	2°♄12'05		minimum elong	3720 Nov 11 04:32	19°♄27'34	2°09'12
retrograde	3714 Dec 21 08:07	10°♄14'09		max. Earth dist.	3720 Nov 11 04:09	19°♄27'27	10.60786 AU
opposition	3715 Feb 26 00:55	6°♄47'25	1°16'45	morning rise	3720 Nov 28 05:05	21°♄32'21	
min. Earth dist.	3715 Feb 25 23:05	6°♄47'48	8.14928 AU	retrograde	3721 Mar 08 06:11	28°♄52'48	
direct	3715 May 04 17:12	3°♄18'17		opposition	3721 May 15 07:52	25°♄32'39	2°35'01
evening set	3715 Aug 18 10:08	11°♄26'56		min. Earth dist.	3721 May 15 07:51	25°♄32'40	8.65690 AU
				direct	3721 Jul 24 17:02	22°♄07'31	
conjunction	3715 Sep 05 10:31	13°♄44'30	1°15'10	evening set	3721 Nov 06 18:23	29°♄43'13	
minimum elong	3715 Sep 05 10:28	13°♄44'29	1°15'10		3721 Nov 09 02:29	0°♄	
max. Earth dist.	3715 Sep 05 12:24	13°♄45'06	10.17478 AU	conjunction	3721 Nov 23 20:10	1°♄47'14	2°01'07
				minimum elong	3721 Nov 23 20:11	1°♄47'14	2°01'08



max. Earth dist.	3721 Nov 23 19:48	1°♏47'07	10.70208 AU	max. Earth dist.	3728 Feb 01 16:20	11°♏57'58	10.99439 AU
morning rise	3721 Dec 10 17:46	3°♏50'02		morning rise	3728 Feb 18 11:05	13°♏56'39	
retrograde	3722 Mar 20 14:35	11°♏04'42			3728 Feb 27 16:32	15°♏	
opposition	3722 May 28 02:09	7°♏45'29	2°21'30	retrograde	3728 May 29 18:46	21°♏02'21	
min. Earth dist.	3722 May 28 02:51	7°♏45'21	8.74743 AU	opposition	3728 Aug 08 09:06	17°♏43'46	0°-25'-6
direct	3722 Aug 06 16:24	4°♏21'34		min. Earth dist.	3728 Aug 08 11:01	17°♏43'25	8.98867 AU
evening set	3722 Nov 19 05:07	11°♏50'08			3728 Sep 20 19:03	15°♏	
				direct	3728 Oct 17 20:25	14°♏25'04	
conjunction	3722 Dec 06 04:09	13°♏52'21	1°47'45		3728 Nov 13 12:06	15°♏	
minimum elong	3722 Dec 06 04:11	13°♏52'22	1°47'46	evening set	3729 Jan 26 15:22	21°♏28'55	
max. Earth dist.	3722 Dec 06 03:00	13°♏52'00	10.78833 AU				
morning rise	3722 Dec 22 23:38	15°♏53'32		conjunction	3729 Feb 12 07:19	23°♏27'00	0°-33'-28
retrograde	3723 Apr 01 17:45	23°♏03'27		minimum elong	3729 Feb 12 07:18	23°♏26'59	0°33'29
opposition	3723 Jun 09 16:34	19°♏44'57	2°02'01	max. Earth dist.	3729 Feb 12 05:04	23°♏26'20	10.97757 AU
min. Earth dist.	3723 Jun 09 18:00	19°♏44'41	8.82808 AU	morning rise	3729 Mar 01 00:02	25°♏25'19	
direct	3723 Aug 19 12:27	16°♏22'13			3729 Apr 14 08:51	0°♏	
evening set	3723 Dec 01 08:40	23°♏44'10		retrograde	3729 Jun 10 23:39	2°♏34'28	
					3729 Aug 10 12:28	30°♏	
conjunction	3723 Dec 18 05:31	25°♏44'54	1°29'56	opposition	3729 Aug 20 16:24	29°♏15'08	0°-56'-27
minimum elong	3723 Dec 18 05:33	25°♏44'55	1°29'56	min. Earth dist.	3729 Aug 20 17:49	29°♏14'52	8.96153 AU
max. Earth dist.	3723 Dec 18 03:31	25°♏44'18	10.86299 AU	direct	3729 Oct 29 20:51	25°♏56'39	
morning rise	3724 Jan 03 23:32	27°♏44'48			3730 Jan 10 19:15	0°♏	
	3724 Jan 23 21:51	0°♏		evening set	3730 Feb 07 05:38	3°♏00'51	
retrograde	3724 Apr 12 19:35	4°♏51'10					
opposition	3724 Jun 21 03:56	1°♏33'08	1°37'42	conjunction	3730 Feb 23 21:45	4°♏59'24	0°-58'-17
min. Earth dist.	3724 Jun 21 05:08	1°♏32'55	8.89547 AU	minimum elong	3730 Feb 23 21:43	4°♏59'24	0°58'19
	3724 Jul 12 17:15	30°♏		max. Earth dist.	3730 Feb 23 20:05	4°♏58'54	10.94016 AU
direct	3724 Aug 31 03:06	28°♏11'32		morning rise	3730 Mar 12 15:13	6°♏58'26	
	3724 Oct 18 01:13	0°♏		retrograde	3730 Jun 23 07:45	14°♏12'22	
evening set	3724 Dec 12 06:16	5°♏27'35		opposition	3730 Sep 02 01:28	10°♏52'05	-1°-25'-46
				min. Earth dist.	3730 Sep 02 02:33	10°♏51'53	8.91465 AU
conjunction	3724 Dec 29 01:30	7°♏27'11	1°08'33	direct	3730 Nov 10 20:05	7°♏33'34	
minimum elong	3724 Dec 29 01:32	7°♏27'11	1°08'33	evening set	3731 Feb 18 23:05	14°♏39'34	
max. Earth dist.	3724 Dec 29 00:00	7°♏26'44	10.92299 AU				
morning rise	3725 Jan 14 18:24	9°♏26'06		conjunction	3731 Mar 07 15:35	16°♏38'54	-1°-20'-57
retrograde	3725 Apr 24 19:22	16°♏30'13		minimum elong	3731 Mar 07 15:33	16°♏38'53	1°20'58
opposition	3725 Jul 03 12:57	13°♏12'26	1°09'40	max. Earth dist.	3731 Mar 07 13:26	16°♏38'15	10.88406 AU
min. Earth dist.	3725 Jul 03 13:38	13°♏12'18	8.94698 AU	morning rise	3731 Mar 24 10:21	18°♏38'56	
direct	3725 Sep 12 12:02	9°♏51'51		retrograde	3731 Jul 05 20:24	25°♏58'46	
evening set	3725 Dec 23 23:29	17°♏02'59		opposition	3731 Sep 14 13:03	22°♏37'22	-1°-51'-54
				min. Earth dist.	3731 Sep 14 14:27	22°♏37'07	8.85047 AU
conjunction	3726 Jan 09 17:29	19°♏01'43	0°44'34	direct	3731 Nov 22 21:40	19°♏18'33	
minimum elong	3726 Jan 09 17:31	19°♏01'44	0°44'35	evening set	3732 Mar 01 20:43	26°♏27'37	
max. Earth dist.	3726 Jan 09 16:33	19°♏01'27	10.96600 AU				
morning rise	3726 Jan 26 09:42	21°♏00'00		conjunction	3732 Mar 18 14:11	28°♏28'05	-1°-40'-27
retrograde	3726 May 06 19:25	28°♏03'15		minimum elong	3732 Mar 18 14:08	28°♏28'05	1°40'29
opposition	3726 Jul 15 20:15	24°♏45'26	0°39'05	max. Earth dist.	3732 Mar 18 11:44	28°♏27'21	10.81211 AU
min. Earth dist.	3726 Jul 15 21:04	24°♏45'17	8.98065 AU		3732 Mar 31 07:33	0°♏	
direct	3726 Sep 24 17:28	21°♏25'42		morning rise	3732 Apr 04 10:45	0°♏29'29	
evening set	3727 Jan 04 13:45	28°♏33'04		retrograde	3732 Jul 17 13:30	7°♏56'07	
	3727 Jan 16 21:23	0°♏		opposition	3732 Sep 26 04:02	4°♏33'28	-2°-13'-41
conjunction	3727 Jan 21 06:43	0°♏31'16	0°18'57	min. Earth dist.	3732 Sep 26 05:32	4°♏33'11	8.77199 AU
minimum elong	3727 Jan 21 06:44	0°♏31'16	0°18'57	direct	3732 Dec 04 01:36	1°♏14'07	
max. Earth dist.	3727 Jan 21 05:09	0°♏30'48	10.99025 AU	evening set	3733 Mar 13 23:38	8°♏27'23	
morning rise	3727 Feb 06 22:48	2°♏29'15					
retrograde	3727 May 18 18:57	9°♏32'58		conjunction	3733 Mar 30 18:50	10°♏29'20	-1°-55'-53
opposition	3727 Jul 28 02:43	6°♏14'55	0°07'06	minimum elong	3733 Mar 30 18:48	10°♏29'19	1°55'54
min. Earth dist.	3727 Jul 28 04:24	6°♏14'36	8.99494 AU	max. Earth dist.	3733 Mar 30 17:15	10°♏28'51	10.72746 AU
direct	3727 Oct 06 19:09	2°♏55'48		morning rise	3733 Apr 16 17:39	12°♏32'24	
desc. node	3727 Oct 19 02:12	3°♏03'12		retrograde	3733 Jul 30 11:59	20°♏06'30	
evening set	3728 Jan 16 02:36	10°♏00'42		opposition	3733 Oct 08 22:42	16°♏42'30	-2°-29'-58
				min. Earth dist.	3733 Oct 08 23:32	16°♏42'21	8.68254 AU
conjunction	3728 Feb 01 18:46	11°♏58'40	0°-7'-26	direct	3733 Dec 16 10:29	13°♏22'27	
minimum elong	3728 Feb 01 18:47	11°♏58'40	0°07'27	evening set	3734 Mar 26 09:13	20°♏40'57	
behind sun begin	3728 Feb 01 12:24	11°♏56'47					
behind sun end	3728 Feb 02 01:10	12°♏00'32		conjunction	3734 Apr 12 06:55	22°♏44'45	-2°-6'-22
				minimum elong	3734 Apr 12 06:54	22°♏44'44	2°06'22



max. Earth dist.	3734 Apr 12 06:40	22° $\Upsilon$ 44'40	10.63367 AU	minimum elong	3740 Jul 01 19:41	11° $\mathfrak{C}$ 55'13	0°59'18
morning rise	3734 Apr 29 08:30	24° $\Upsilon$ 49'47		max. Earth dist.	3740 Jul 01 22:37	11° $\mathfrak{C}$ 56'10	10.13023 AU
	3734 Jun 17 06:56	0° $\mathfrak{C}$		morning rise	3740 Jul 19 20:47	14° $\mathfrak{C}$ 13'49	
retrograde	3734 Aug 12 18:14	2° $\mathfrak{C}$ 31'37		retrograde	3740 Nov 02 17:56	22° $\mathfrak{C}$ 26'13	
	3734 Oct 10 04:50	30° $\mathfrak{R}$ $\Upsilon$		opposition	3741 Jan 09 06:54	18° $\mathfrak{C}$ 57'02	0°-55'-34
opposition	3734 Oct 21 21:20	29° $\Upsilon$ 06'19	-2°-39'-41	min. Earth dist.	3741 Jan 09 04:18	18° $\mathfrak{C}$ 57'34	8.11178 AU
min. Earth dist.	3734 Oct 21 21:08	29° $\Upsilon$ 06'21	8.58588 AU	direct	3741 Mar 17 00:40	15° $\mathfrak{C}$ 29'35	
direct	3734 Dec 28 23:03	25° $\Upsilon$ 45'23		evening set	3741 Jun 28 13:23	23° $\mathfrak{C}$ 33'08	
	3735 Mar 11 10:33	0° $\mathfrak{C}$					
evening set	3735 Apr 08 02:20	3° $\mathfrak{C}$ 09'59		conjunction	3741 Jul 16 15:06	25° $\mathfrak{C}$ 52'16	0°-29'-27
				minimum elong	3741 Jul 16 15:07	25° $\mathfrak{C}$ 52'16	0°29'29
conjunction	3735 Apr 25 03:08	5° $\mathfrak{C}$ 15'55	-2°-11'-5	max. Earth dist.	3741 Jul 16 18:16	25° $\mathfrak{C}$ 53'17	10.09873 AU
minimum elong	3735 Apr 25 03:08	5° $\mathfrak{C}$ 15'55	2°11'06	morning rise	3741 Aug 03 18:09	28° $\mathfrak{C}$ 11'52	
max. Earth dist.	3735 Apr 25 03:27	5° $\mathfrak{C}$ 16'01	10.53484 AU		3741 Aug 18 08:21	0° $\mathfrak{Q}$	
morning rise	3735 May 12 08:10	7° $\mathfrak{C}$ 23'12		retrograde	3741 Nov 17 02:25	6° $\mathfrak{Q}$ 23'38	
	3735 Aug 10 11:34	15° $\mathfrak{C}$		opposition	3742 Jan 23 06:32	2° $\mathfrak{Q}$ 54'52	0°-17'-1
retrograde	3735 Aug 26 07:25	15° $\mathfrak{C}$ 12'43		min. Earth dist.	3742 Jan 23 03:56	2° $\mathfrak{Q}$ 55'24	8.09187 AU
	3735 Sep 11 02:06	15° $\mathfrak{R}$ $\mathfrak{C}$			3742 Mar 06 12:14	30° $\mathfrak{R}$ $\mathfrak{C}$	
opposition	3735 Nov 04 00:41	11° $\mathfrak{C}$ 46'12	-2°-41'-58	direct	3742 Mar 31 03:10	29° $\mathfrak{C}$ 26'39	
min. Earth dist.	3735 Nov 03 23:53	11° $\mathfrak{C}$ 46'21	8.48629 AU		3742 Apr 24 16:56	0° $\mathfrak{Q}$	
direct	3736 Jan 10 14:46	8° $\mathfrak{C}$ 24'15		asc. node	3742 Jul 05 00:11	6° $\mathfrak{Q}$ 30'56	
	3736 Apr 12 12:00	15° $\mathfrak{C}$		evening set	3742 Jul 13 09:54	7° $\mathfrak{Q}$ 33'57	
evening set	3736 Apr 20 03:28	15° $\mathfrak{C}$ 55'34					
				conjunction	3742 Jul 31 13:04	9° $\mathfrak{Q}$ 53'39	0°02'17
conjunction	3736 May 07 08:03	18° $\mathfrak{C}$ 03'53	-2°-9'-29	minimum elong	3742 Jul 31 13:04	9° $\mathfrak{Q}$ 53'39	0°02'17
minimum elong	3736 May 07 08:04	18° $\mathfrak{C}$ 03'53	2°09'30	behind sun begin	3742 Jul 31 05:43	9° $\mathfrak{Q}$ 51'18	
max. Earth dist.	3736 May 07 08:22	18° $\mathfrak{C}$ 03'58	10.43559 AU	behind sun end	3742 Jul 31 20:26	9° $\mathfrak{Q}$ 56'00	
morning rise	3736 May 24 17:12	20° $\mathfrak{C}$ 13'38		max. Earth dist.	3742 Jul 31 15:56	9° $\mathfrak{Q}$ 54'31	10.09110 AU
retrograde	3736 Sep 08 00:37	28° $\mathfrak{C}$ 10'19		morning rise	3742 Aug 18 16:29	12° $\mathfrak{Q}$ 13'26	
opposition	3736 Nov 16 08:41	24° $\mathfrak{C}$ 42'45	-2°-36'-10		3742 Sep 10 13:25	15° $\mathfrak{Q}$	
min. Earth dist.	3736 Nov 16 07:52	24° $\mathfrak{C}$ 42'55	8.38851 AU	retrograde	3742 Dec 01 09:19	20° $\mathfrak{Q}$ 22'41	
direct	3737 Jan 22 14:37	21° $\mathfrak{C}$ 19'40		opposition	3743 Feb 06 06:31	16° $\mathfrak{Q}$ 54'38	0°22'36
evening set	3737 May 03 13:20	28° $\mathfrak{C}$ 58'05		min. Earth dist.	3743 Feb 06 04:17	16° $\mathfrak{Q}$ 55'05	8.09654 AU
	3737 May 11 19:52	0° $\mathfrak{I}$			3743 Mar 02 21:33	15° $\mathfrak{R}$ $\mathfrak{Q}$	
conjunction	3737 May 20 22:23	1° $\mathfrak{I}$ 08'57	-2°-1'-14	direct	3743 Apr 14 08:26	13° $\mathfrak{Q}$ 25'54	
minimum elong	3737 May 20 22:25	1° $\mathfrak{I}$ 08'58	2°01'15		3743 May 26 10:16	15° $\mathfrak{Q}$	
max. Earth dist.	3737 May 20 22:47	1° $\mathfrak{I}$ 09'05	10.34072 AU	evening set	3743 Jul 28 08:04	21° $\mathfrak{Q}$ 35'18	
morning rise	3737 Jun 07 12:00	3° $\mathfrak{I}$ 21'14		conjunction	3743 Aug 15 11:07	23° $\mathfrak{Q}$ 54'44	0°33'47
retrograde	3737 Sep 21 23:09	11° $\mathfrak{I}$ 24'09		minimum elong	3743 Aug 15 11:05	23° $\mathfrak{Q}$ 54'43	0°33'46
opposition	3737 Nov 29 20:55	7° $\mathfrak{I}$ 55'45	-2°-22'-3	max. Earth dist.	3743 Aug 15 13:31	23° $\mathfrak{Q}$ 55'30	10.10806 AU
min. Earth dist.	3737 Nov 29 20:14	7° $\mathfrak{I}$ 55'54	8.29745 AU	morning rise	3743 Sep 02 13:18	26° $\mathfrak{Q}$ 13'52	
direct	3738 Feb 04 20:43	4° $\mathfrak{I}$ 31'29			3743 Oct 04 10:19	0° $\mathfrak{R}$	
evening set	3738 May 17 07:52	12° $\mathfrak{I}$ 17'01		retrograde	3743 Dec 15 12:50	4° $\mathfrak{R}$ 18'52	
				opposition	3744 Feb 20 05:33	0° $\mathfrak{R}$ 51'45	1°00'45
conjunction	3738 Jun 03 21:45	14° $\mathfrak{I}$ 30'28	-1°-46'-22	min. Earth dist.	3744 Feb 20 03:42	0° $\mathfrak{R}$ 52'08	8.12567 AU
minimum elong	3738 Jun 03 21:48	14° $\mathfrak{I}$ 30'29	1°46'24		3744 Mar 01 20:31	30° $\mathfrak{R}$ $\mathfrak{Q}$	
max. Earth dist.	3738 Jun 03 22:54	14° $\mathfrak{I}$ 30'50	10.25510 AU	direct	3744 Apr 27 16:20	27° $\mathfrak{Q}$ 22'47	
morning rise	3738 Jun 21 15:47	16° $\mathfrak{I}$ 45'13			3744 Jun 22 03:29	0° $\mathfrak{R}$	
retrograde	3738 Oct 06 02:43	24° $\mathfrak{I}$ 53'01		evening set	3744 Aug 11 05:12	5° $\mathfrak{R}$ 32'27	
opposition	3738 Dec 13 13:12	21° $\mathfrak{I}$ 24'03	-1°-59'-53				
min. Earth dist.	3738 Dec 13 12:01	21° $\mathfrak{I}$ 24'17	8.21799 AU	conjunction	3744 Aug 29 06:38	7° $\mathfrak{R}$ 50'47	1°03'09
direct	3739 Feb 18 08:08	17° $\mathfrak{I}$ 58'37		minimum elong	3744 Aug 29 06:36	7° $\mathfrak{R}$ 50'47	1°03'09
evening set	3739 May 31 10:34	25° $\mathfrak{I}$ 50'56		max. Earth dist.	3744 Aug 29 08:33	7° $\mathfrak{R}$ 51'24	10.14856 AU
				morning rise	3744 Sep 16 06:09	10° $\mathfrak{R}$ 08'30	
conjunction	3739 Jun 18 05:10	28° $\mathfrak{I}$ 06'45	-1°-25'-23	retrograde	3744 Dec 28 10:07	18° $\mathfrak{R}$ 07'49	
minimum elong	3739 Jun 18 05:13	28° $\mathfrak{I}$ 06'46	1°25'25	opposition	3745 Mar 05 02:37	14° $\mathfrak{R}$ 41'50	1°34'59
max. Earth dist.	3739 Jun 18 07:20	28° $\mathfrak{I}$ 07'27	10.18349 AU	min. Earth dist.	3745 Mar 05 00:53	14° $\mathfrak{R}$ 42'11	8.17728 AU
	3739 Jul 02 23:59	0° $\mathfrak{C}$		direct	3745 May 12 00:31	11° $\mathfrak{R}$ 12'54	
morning rise	3739 Jul 06 03:10	0° $\mathfrak{C}$ 23'41		evening set	3745 Aug 25 22:38	19° $\mathfrak{R}$ 20'53	
retrograde	3739 Oct 20 09:43	8° $\mathfrak{C}$ 34'44					
opposition	3739 Dec 27 08:51	5° $\mathfrak{C}$ 05'30	-1°-30'-33	conjunction	3745 Sep 12 21:09	21° $\mathfrak{R}$ 37'28	1°28'36
min. Earth dist.	3739 Dec 27 06:52	5° $\mathfrak{C}$ 05'54	8.15476 AU	minimum elong	3745 Sep 12 21:06	21° $\mathfrak{R}$ 37'27	1°28'36
direct	3740 Mar 03 01:59	1° $\mathfrak{C}$ 38'59		max. Earth dist.	3745 Sep 12 22:50	21° $\mathfrak{R}$ 38'00	10.20989 AU
evening set	3740 Jun 13 20:55	9° $\mathfrak{C}$ 37'25		morning rise	3745 Sep 30 16:45	23° $\mathfrak{R}$ 53'07	
					3745 Nov 27 15:04	0° $\mathfrak{Q}$	
conjunction	3740 Jul 01 19:38	11° $\mathfrak{C}$ 55'12	0°-59'-15	retrograde	3746 Jan 11 02:02	1° $\mathfrak{Q}$ 45'43	



	3746 Feb 25 12:45	30° $\mathbb{R}$ $\mathbb{M}$		opposition	3752 Jun 03 15:27	14° $\mathbb{Z}$ 51'07	2°10'56
opposition	3746 Mar 18 20:35	28° $\mathbb{M}$ 20'55	2°03'18	min. Earth dist.	3752 Jun 03 16:52	14° $\mathbb{Z}$ 50'51	8.78756 AU
min. Earth dist.	3746 Mar 18 18:35	28° $\mathbb{M}$ 21'19	8.24794 AU	direct	3752 Aug 13 10:03	11° $\mathbb{Z}$ 27'56	
direct	3746 May 26 06:08	24° $\mathbb{M}$ 52'20		evening set	3752 Nov 25 13:18	18° $\mathbb{Z}$ 53'23	
	3746 Aug 15 12:52	0° $\mathbb{Z}$					
evening set	3746 Sep 09 09:50	2° $\mathbb{Z}$ 56'46		conjunction	3752 Dec 12 11:18	20° $\mathbb{Z}$ 54'55	1°37'58
				minimum elong	3752 Dec 12 11:20	20° $\mathbb{Z}$ 54'56	1°37'58
conjunction	3746 Sep 27 04:38	5° $\mathbb{Z}$ 11'08	1°48'44	max. Earth dist.	3752 Dec 12 09:16	20° $\mathbb{Z}$ 54'18	10.82269 AU
minimum elong	3746 Sep 27 04:36	5° $\mathbb{Z}$ 11'07	1°48'44	morning rise	3752 Dec 29 05:50	22° $\mathbb{Z}$ 55'29	
max. Earth dist.	3746 Sep 27 06:26	5° $\mathbb{Z}$ 11'42	10.28815 AU		3753 Mar 30 07:19	0° $\mathbb{Z}$	
morning rise	3746 Oct 14 19:39	7° $\mathbb{Z}$ 24'20		retrograde	3753 Apr 08 02:43	0° $\mathbb{Z}$ 03'58	
retrograde	3747 Jan 24 12:51	15° $\mathbb{Z}$ 09'33			3753 Apr 16 21:33	30° $\mathbb{R}$ $\mathbb{Z}$	
opposition	3747 Apr 01 10:42	11° $\mathbb{Z}$ 45'57	2°24'19	opposition	3753 Jun 16 04:55	26° $\mathbb{Z}$ 45'42	1°48'33
min. Earth dist.	3747 Apr 01 08:55	11° $\mathbb{Z}$ 46'18	8.33306 AU	min. Earth dist.	3753 Jun 16 06:47	26° $\mathbb{Z}$ 45'21	8.85595 AU
direct	3747 Jun 09 07:10	8° $\mathbb{Z}$ 17'55		direct	3753 Aug 26 02:09	23° $\mathbb{Z}$ 23'30	
evening set	3747 Sep 23 12:55	16° $\mathbb{Z}$ 17'13			3753 Dec 01 10:43	0° $\mathbb{Z}$	
				evening set	3753 Dec 07 13:57	0° $\mathbb{Z}$ 42'46	
conjunction	3747 Oct 11 03:37	18° $\mathbb{Z}$ 29'08	2°02'40				
minimum elong	3747 Oct 11 03:35	18° $\mathbb{Z}$ 29'08	2°02'40	conjunction	3753 Dec 24 10:00	2° $\mathbb{Z}$ 43'02	1°17'59
max. Earth dist.	3747 Oct 11 04:59	18° $\mathbb{Z}$ 29'34	10.37814 AU	minimum elong	3753 Dec 24 10:02	2° $\mathbb{Z}$ 43'03	1°17'58
morning rise	3747 Oct 28 13:56	20° $\mathbb{Z}$ 39'45		max. Earth dist.	3753 Dec 24 07:29	2° $\mathbb{Z}$ 42'17	10.88441 AU
retrograde	3748 Feb 06 17:04	28° $\mathbb{Z}$ 17'20		morning rise	3754 Jan 10 03:22	4° $\mathbb{Z}$ 42'33	
opposition	3748 Apr 13 20:25	24° $\mathbb{Z}$ 54'57	2°37'14	retrograde	3754 Apr 20 02:31	11° $\mathbb{Z}$ 48'16	
min. Earth dist.	3748 Apr 13 19:41	24° $\mathbb{Z}$ 55'05	8.42686 AU	opposition	3754 Jun 28 15:35	8° $\mathbb{Z}$ 30'10	1°21'56
direct	3748 Jun 22 04:00	21° $\mathbb{Z}$ 27'38		min. Earth dist.	3754 Jun 28 18:06	8° $\mathbb{Z}$ 29'42	8.90991 AU
evening set	3748 Oct 06 07:05	29° $\mathbb{Z}$ 20'47		direct	3754 Sep 07 13:17	5° $\mathbb{Z}$ 08'49	
	3748 Oct 11 14:58	0° $\mathbb{M}$		evening set	3754 Dec 19 09:35	12° $\mathbb{Z}$ 22'49	
conjunction	3748 Oct 23 17:31	1° $\mathbb{M}$ 30'12	2°09'59	conjunction	3755 Jan 05 04:06	14° $\mathbb{Z}$ 22'07	0°54'58
minimum elong	3748 Oct 23 17:30	1° $\mathbb{M}$ 30'12	2°09'59	minimum elong	3755 Jan 05 04:08	14° $\mathbb{Z}$ 22'08	0°54'58
max. Earth dist.	3748 Oct 23 17:35	1° $\mathbb{M}$ 30'13	10.47380 AU	max. Earth dist.	3755 Jan 05 00:57	14° $\mathbb{Z}$ 21'11	10.93057 AU
morning rise	3748 Nov 09 23:26	3° $\mathbb{M}$ 38'17		morning rise	3755 Jan 21 20:49	16° $\mathbb{Z}$ 20'54	
retrograde	3749 Feb 18 13:43	11° $\mathbb{M}$ 08'30		retrograde	3755 May 02 01:51	23° $\mathbb{Z}$ 25'11	
opposition	3749 Apr 27 01:33	7° $\mathbb{M}$ 47'17	2°41'53	opposition	3755 Jul 10 23:55	20° $\mathbb{Z}$ 07'00	0°52'15
min. Earth dist.	3749 Apr 27 02:21	7° $\mathbb{M}$ 47'08	8.52339 AU	min. Earth dist.	3755 Jul 11 02:22	20° $\mathbb{Z}$ 06'33	8.94741 AU
direct	3749 Jul 05 20:21	4° $\mathbb{M}$ 20'54		direct	3755 Sep 19 22:42	16° $\mathbb{Z}$ 46'23	
evening set	3749 Oct 19 15:48	12° $\mathbb{M}$ 07'17		evening set	3755 Dec 31 01:26	23° $\mathbb{Z}$ 56'12	
conjunction	3749 Nov 05 22:15	14° $\mathbb{M}$ 14'20	2°10'41	conjunction	3756 Jan 16 18:54	25° $\mathbb{Z}$ 54'52	0°29'53
minimum elong	3749 Nov 05 22:15	14° $\mathbb{M}$ 14'20	2°10'42	minimum elong	3756 Jan 16 18:55	25° $\mathbb{Z}$ 54'52	0°29'53
max. Earth dist.	3749 Nov 05 20:34	14° $\mathbb{M}$ 13'49	10.56982 AU	max. Earth dist.	3756 Jan 16 16:14	25° $\mathbb{Z}$ 54'04	10.95945 AU
	3749 Nov 12 02:15	15° $\mathbb{M}$		morning rise	3756 Feb 02 11:13	27° $\mathbb{Z}$ 53'12	
morning rise	3749 Nov 23 00:23	16° $\mathbb{M}$ 20'06			3756 Feb 21 06:43	0° $\approx$	
retrograde	3750 Mar 03 05:18	23° $\mathbb{M}$ 43'36		retrograde	3756 May 13 01:48	4° $\approx$ 57'27	
opposition	3750 May 10 02:21	20° $\mathbb{M}$ 23'26	2°38'35	opposition	3756 Jul 22 07:06	1° $\approx$ 38'59	0°20'40
min. Earth dist.	3750 May 10 03:55	20° $\mathbb{M}$ 23'08	8.61807 AU	min. Earth dist.	3756 Jul 22 08:37	1° $\approx$ 38'42	8.96708 AU
direct	3750 Jul 19 06:36	16° $\mathbb{M}$ 58'06			3756 Aug 14 13:13	30° $\mathbb{R}$ $\mathbb{Z}$	
evening set	3750 Nov 01 15:08	24° $\mathbb{M}$ 37'24		direct	3756 Oct 01 02:45	28° $\mathbb{Z}$ 19'01	
					3756 Nov 16 03:11	0° $\approx$	
conjunction	3750 Nov 18 18:10	26° $\mathbb{M}$ 42'20	2°05'09	evening set	3757 Jan 10 15:01	5° $\approx$ 25'49	
minimum elong	3750 Nov 18 18:11	26° $\mathbb{M}$ 42'20	2°05'09				
max. Earth dist.	3750 Nov 18 15:36	26° $\mathbb{M}$ 41'33	10.66230 AU	conjunction	3757 Jan 27 07:46	7° $\approx$ 24'08	0°03'44
morning rise	3750 Dec 05 17:13	28° $\mathbb{M}$ 46'04		minimum elong	3757 Jan 27 07:46	7° $\approx$ 24'08	0°03'45
	3750 Dec 16 04:12	0° $\mathbb{Z}$		behind sun begin	3757 Jan 27 00:51	7° $\approx$ 22'06	
retrograde	3751 Mar 15 15:42	6° $\mathbb{Z}$ 03'36		behind sun end	3757 Jan 27 14:41	7° $\approx$ 26'10	
opposition	3751 May 22 22:52	2° $\mathbb{Z}$ 44'17	2°27'57	max. Earth dist.	3757 Jan 27 06:11	7° $\approx$ 23'43	10.96997 AU
min. Earth dist.	3751 May 23 00:24	2° $\mathbb{Z}$ 43'59	8.70726 AU	morning rise	3757 Feb 12 23:57	9° $\approx$ 22'22	
	3751 Jul 03 16:26	30° $\mathbb{R}$ $\mathbb{M}$		desc. node	3757 Mar 20 13:35	13° $\approx$ 09'59	
direct	3751 Aug 01 10:50	29° $\mathbb{M}$ 20'02			3757 Apr 12 08:48	15° $\approx$	
	3751 Aug 29 23:17	0° $\mathbb{Z}$		retrograde	3757 May 25 02:43	16° $\approx$ 28'02	
evening set	3751 Nov 14 06:01	6° $\mathbb{Z}$ 52'15			3757 Jul 08 02:59	15° $\mathbb{R}$ $\approx$	
conjunction	3751 Dec 01 06:17	8° $\mathbb{Z}$ 55'20	1°53'59	opposition	3757 Aug 03 13:59	13° $\approx$ 09'04	0°-11'-39
minimum elong	3751 Dec 01 06:19	8° $\mathbb{Z}$ 55'21	1°53'59	min. Earth dist.	3757 Aug 03 15:03	13° $\approx$ 08'52	8.96824 AU
max. Earth dist.	3751 Dec 01 03:52	8° $\mathbb{Z}$ 54'36	10.74770 AU	direct	3757 Oct 13 04:06	9° $\approx$ 49'36	
morning rise	3751 Dec 18 02:46	10° $\mathbb{Z}$ 57'20			3758 Jan 05 05:11	15° $\approx$	
retrograde	3752 Mar 26 22:18	18° $\mathbb{Z}$ 09'48		evening set	3758 Jan 22 04:07	16° $\approx$ 54'43	



conjunction	3758 Feb 07 20:19	18° $\approx$ 53'00	0°-22'-40	max. Earth dist.	3764 Apr 19 03:43	0° $\approx$ 17'51	10.58249 AU
minimum elong	3758 Feb 07 20:19	18° $\approx$ 53'00	0°22'41	morning rise	3764 May 06 06:32	2° $\approx$ 23'53	
max. Earth dist.	3758 Feb 07 18:36	18° $\approx$ 52'30	10.96179 AU	retrograde	3764 Aug 20 00:14	10° $\approx$ 10'01	
morning rise	3758 Feb 24 12:53	20° $\approx$ 51'26		opposition	3764 Oct 28 22:23	6° $\approx$ 44'20	-2°-41'-47
retrograde	3758 Jun 06 06:32	27° $\approx$ 59'51		min. Earth dist.	3764 Oct 28 21:21	6° $\approx$ 44'32	8.53723 AU
opposition	3758 Aug 15 21:11	24° $\approx$ 40'15	0°-43'-35	direct	3765 Jan 04 16:41	3° $\approx$ 23'11	
min. Earth dist.	3758 Aug 15 22:32	24° $\approx$ 40'01	8.95088 AU	evening set	3765 Apr 15 01:28	10° $\approx$ 51'21	
direct	3758 Oct 25 04:06	21° $\approx$ 21'05					
evening set	3759 Feb 02 18:03	28° $\approx$ 25'54		conjunction	3765 May 02 04:21	12° $\approx$ 58'31	-2°-10'-48
	3759 Feb 16 00:05	0° $\approx$		minimum elong	3765 May 02 04:22	12° $\approx$ 58'31	2°10'49
				max. Earth dist.	3765 May 02 06:18	12° $\approx$ 59'07	10.48919 AU
conjunction	3759 Feb 19 10:03	0° $\approx$ 24'28	0°-48'-10		3765 May 18 12:31	15° $\approx$	
minimum elong	3759 Feb 19 10:02	0° $\approx$ 24'28	0°48'11	morning rise	3765 May 19 11:39	15° $\approx$ 07'04	
max. Earth dist.	3759 Feb 19 07:54	0° $\approx$ 23'50	10.93519 AU	retrograde	3765 Sep 02 14:59	23° $\approx$ 00'23	
morning rise	3759 Mar 08 03:24	2° $\approx$ 23'26		opposition	3765 Nov 11 04:22	19° $\approx$ 33'43	-2°-39'-20
retrograde	3759 Jun 18 11:20	9° $\approx$ 35'56		min. Earth dist.	3765 Nov 11 02:35	19° $\approx$ 34'04	8.44421 AU
opposition	3759 Aug 28 05:50	6° $\approx$ 15'31	-1°-13'-56	direct	3766 Jan 17 14:31	16° $\approx$ 11'39	
min. Earth dist.	3759 Aug 28 07:12	6° $\approx$ 15'16	8.91549 AU	evening set	3766 Apr 28 07:41	23° $\approx$ 46'29	
direct	3759 Nov 06 04:12	2° $\approx$ 56'28					
evening set	3760 Feb 14 10:09	10° $\approx$ 02'21		conjunction	3766 May 15 14:49	25° $\approx$ 56'04	-2°-5'-18
				minimum elong	3766 May 15 14:51	25° $\approx$ 56'05	2°05'19
conjunction	3760 Mar 02 02:28	12° $\approx$ 01'30	-1°-11'-52	max. Earth dist.	3766 May 15 17:36	25° $\approx$ 56'57	10.39752 AU
minimum elong	3760 Mar 02 02:26	12° $\approx$ 01'30	1°11'53	morning rise	3766 Jun 02 02:14	28° $\approx$ 07'02	
max. Earth dist.	3760 Mar 02 01:10	12° $\approx$ 01'07	10.89100 AU		3766 Jun 17 19:04	0° $\approx$	
morning rise	3760 Mar 18 20:47	14° $\approx$ 01'17		retrograde	3766 Sep 16 12:08	6° $\approx$ 06'43	
retrograde	3760 Jun 29 21:43	21° $\approx$ 19'07		opposition	3766 Nov 24 14:31	2° $\approx$ 39'13	-2°-28'-38
opposition	3760 Sep 08 16:37	17° $\approx$ 57'43	-1°-41'-33	min. Earth dist.	3766 Nov 24 12:08	2° $\approx$ 39'41	8.35481 AU
min. Earth dist.	3760 Sep 08 17:00	17° $\approx$ 57'39	8.86332 AU		3767 Jan 01 23:44	30° $\approx$	
direct	3760 Nov 17 06:39	14° $\approx$ 38'38		direct	3767 Jan 30 16:54	29° $\approx$ 16'06	
evening set	3761 Feb 25 05:59	21° $\approx$ 46'49			3767 Feb 28 01:47	0° $\approx$	
				evening set	3767 May 11 22:21	6° $\approx$ 57'44	
conjunction	3761 Mar 13 23:09	23° $\approx$ 46'56	-1°-32'-48				
minimum elong	3761 Mar 13 23:07	23° $\approx$ 46'56	1°32'49	conjunction	3767 May 29 10:03	9° $\approx$ 09'49	-1°-53'-9
max. Earth dist.	3761 Mar 13 23:05	23° $\approx$ 46'55	10.83087 AU	minimum elong	3767 May 29 10:06	9° $\approx$ 09'50	1°53'11
morning rise	3761 Mar 30 18:50	25° $\approx$ 47'52		max. Earth dist.	3767 May 29 12:37	9° $\approx$ 10'38	10.31170 AU
	3761 May 08 23:51	0° $\approx$		morning rise	3767 Jun 16 01:54	11° $\approx$ 23'14	
retrograde	3761 Jul 12 14:54	3° $\approx$ 11'58		retrograde	3767 Sep 30 14:26	19° $\approx$ 28'08	
	3761 Sep 18 22:51	30° $\approx$		opposition	3767 Dec 08 04:49	16° $\approx$ 00'00	-2°-9'-46
opposition	3761 Sep 21 06:15	29° $\approx$ 49'32	-2°-5'-15	min. Earth dist.	3767 Dec 08 02:38	16° $\approx$ 00'26	8.27307 AU
min. Earth dist.	3761 Sep 21 05:41	29° $\approx$ 49'38	8.79640 AU	direct	3768 Feb 13 00:36	12° $\approx$ 35'44	
direct	3761 Nov 29 09:02	26° $\approx$ 30'13		evening set	3768 May 24 21:10	20° $\approx$ 24'07	
	3762 Feb 03 13:33	0° $\approx$					
evening set	3762 Mar 09 06:49	3° $\approx$ 41'57		conjunction	3768 Jun 11 13:33	22° $\approx$ 38'37	-1°-34'-40
				minimum elong	3768 Jun 11 13:36	22° $\approx$ 38'38	1°34'41
conjunction	3762 Mar 26 01:19	5° $\approx$ 43'20	-1°-50'-1	max. Earth dist.	3768 Jun 11 15:18	22° $\approx$ 39'11	10.23558 AU
minimum elong	3762 Mar 26 01:16	5° $\approx$ 43'19	1°50'02	morning rise	3768 Jun 29 09:45	24° $\approx$ 54'20	
max. Earth dist.	3762 Mar 26 01:37	5° $\approx$ 43'25	10.75725 AU		3768 Aug 13 22:59	0° $\approx$	
morning rise	3762 Apr 11 23:01	7° $\approx$ 45'44		retrograde	3768 Oct 13 20:02	3° $\approx$ 03'05	
retrograde	3762 Jul 25 11:44	15° $\approx$ 16'52			3768 Dec 15 17:07	30° $\approx$	
opposition	3762 Oct 03 23:29	11° $\approx$ 53'20	-2°-23'-54	opposition	3768 Dec 20 22:39	29° $\approx$ 34'36	-1°-43'-21
min. Earth dist.	3762 Oct 03 22:37	11° $\approx$ 53'30	8.71737 AU	min. Earth dist.	3768 Dec 20 21:09	29° $\approx$ 34'54	8.20299 AU
direct	3762 Dec 11 14:43	8° $\approx$ 33'35		direct	3769 Feb 25 15:25	26° $\approx$ 09'11	
evening set	3763 Mar 21 13:47	15° $\approx$ 49'58			3769 May 04 04:27	0° $\approx$	
				evening set	3769 Jun 08 03:56	4° $\approx$ 04'01	
conjunction	3763 Apr 07 10:11	17° $\approx$ 52'58	-2°-2'-37				
minimum elong	3763 Apr 07 10:09	17° $\approx$ 52'57	2°02'38	conjunction	3769 Jun 26 00:41	6° $\approx$ 20'40	-1°-10'-36
max. Earth dist.	3763 Apr 07 10:14	17° $\approx$ 52'58	10.67319 AU	minimum elong	3769 Jun 26 00:44	6° $\approx$ 20'41	1°10'38
morning rise	3763 Apr 24 10:32	19° $\approx$ 57'09		max. Earth dist.	3769 Jun 26 01:50	6° $\approx$ 21'02	10.17346 AU
retrograde	3763 Aug 07 14:48	27° $\approx$ 35'45		morning rise	3769 Jul 14 00:34	8° $\approx$ 38'18	
opposition	3763 Oct 16 20:45	24° $\approx$ 11'07	-2°-36'-24	retrograde	3769 Oct 28 02:09	16° $\approx$ 49'14	
min. Earth dist.	3763 Oct 16 20:06	24° $\approx$ 11'15	8.62965 AU	opposition	3770 Jan 03 19:12	13° $\approx$ 20'40	-1°-10'-37
direct	3763 Dec 24 01:25	20° $\approx$ 50'45		min. Earth dist.	3770 Jan 03 18:07	13° $\approx$ 20'53	8.14939 AU
evening set	3764 Apr 02 03:45	28° $\approx$ 12'42		direct	3770 Mar 11 12:31	9° $\approx$ 54'10	
	3764 Apr 16 17:57	0° $\approx$		evening set	3770 Jun 22 17:19	17° $\approx$ 54'39	
conjunction	3764 Apr 19 02:57	0° $\approx$ 17'37	-2°-9'-46	conjunction	3770 Jul 10 17:36	20° $\approx$ 12'58	0°-42'-13
minimum elong	3764 Apr 19 02:57	0° $\approx$ 17'37	2°09'47	minimum elong	3770 Jul 10 17:38	20° $\approx$ 12'59	0°42'15



max. Earth dist.	3770 Jul 10 18:45	20°☾13'20	10.13005 AU	conjunction	3776 Oct 04 11:54	12°♊59'25	1°57'28
morning rise	3770 Jul 28 20:00	22°☾31'56		minimum elong	3776 Oct 04 11:51	12°♊59'24	1°57'28
	3770 Oct 14 03:44	0°♊		max. Earth dist.	3776 Oct 04 11:31	12°♊59'18	10.33331 AU
retrograde	3770 Nov 11 09:21	0°♊43'10		morning rise	3776 Oct 22 00:27	15°♊11'11	
	3770 Dec 09 18:14	30°♋☾		retrograde	3777 Jan 31 08:05	22°♊51'55	
opposition	3771 Jan 17 17:43	27°☾14'45	0°-33'-25	opposition	3777 Apr 08 09:55	19°♊28'36	2°32'43
min. Earth dist.	3771 Jan 17 16:29	27°☾15'01	8.11657 AU	min. Earth dist.	3777 Apr 08 09:49	19°♊28'37	8.37919 AU
direct	3771 Mar 25 13:28	23°☾47'18		direct	3777 Jun 16 13:59	16°♊00'29	
	3771 Jun 22 07:18	0°♊		evening set	3777 Sep 30 17:01	23°♊56'20	
evening set	3771 Jul 07 11:25	1°♊52'11					
conjunction	3771 Jul 25 14:01	4°♊11'27	0°-11'-12	conjunction	3777 Oct 18 05:15	26°♊06'51	2°07'40
minimum elong	3771 Jul 25 14:02	4°♊11'27	0°11'14	minimum elong	3777 Oct 18 05:13	26°♊06'50	2°07'40
behind sun begin	3771 Jul 25 08:42	4°♊09'45		max. Earth dist.	3777 Oct 18 04:43	26°♊06'41	10.42455 AU
behind sun end	3771 Jul 25 19:21	4°♊13'09		morning rise	3777 Nov 04 13:15	28°♊16'05	
max. Earth dist.	3771 Jul 25 15:46	4°♊12'00	10.10882 AU		3777 Nov 19 01:02	0°♋	
morning rise	3771 Aug 12 17:26	6°♊30'59		retrograde	3778 Feb 13 06:42	5°♋49'25	
retrograde	3771 Nov 25 16:09	14°♊40'39		opposition	3778 Apr 21 16:36	2°♋27'14	2°40'57
asc. node	3771 Dec 06 01:13	14°♊34'40		min. Earth dist.	3778 Apr 21 16:18	2°♋27'17	8.47373 AU
opposition	3772 Jan 31 16:59	11°♊12'36	0°05'55		3778 May 26 10:33	30°♋♊	
min. Earth dist.	3772 Jan 31 15:11	11°♊12'58	8.10708 AU	direct	3778 Jun 30 08:44	28°♊59'57	
direct	3772 Apr 07 17:23	7°♊44'23			3778 Aug 03 22:47	0°♋	
	3772 Jul 14 09:35	15°♊		evening set	3778 Oct 14 05:17	6°♋49'14	
evening set	3772 Jul 21 08:26	15°♊52'08					
conjunction	3772 Aug 08 11:46	18°♊11'33	0°20'36	conjunction	3778 Oct 31 13:35	8°♋57'20	2°11'14
minimum elong	3772 Aug 08 11:45	18°♊11'33	0°20'35	minimum elong	3778 Oct 31 13:34	8°♋57'19	2°11'14
max. Earth dist.	3772 Aug 08 13:54	18°♊12'14	10.11135 AU	max. Earth dist.	3778 Oct 31 13:18	8°♋57'14	10.52094 AU
morning rise	3772 Aug 26 14:33	20°♊30'50		morning rise	3778 Nov 17 17:23	11°♋04'06	
retrograde	3772 Dec 08 20:46	28°♊37'02			3778 Dec 22 21:11	15°♋	
opposition	3773 Feb 13 15:41	25°♊09'39	0°44'54	retrograde	3779 Feb 26 01:19	18°♋30'22	
min. Earth dist.	3773 Feb 13 13:45	25°♊10'03	8.12161 AU	opposition	3779 May 04 18:40	15°♋09'15	2°41'04
direct	3773 Apr 21 23:22	21°♊40'53		min. Earth dist.	3779 May 04 18:32	15°♋09'17	8.57086 AU
evening set	3773 Aug 05 05:33	29°♊49'47			3779 May 06 18:09	15°♋♋	
	3773 Aug 06 13:57	0°♋		direct	3779 Jul 13 19:56	11°♋43'00	
conjunction	3773 Aug 23 07:56	2°♋08'31	0°51'02		3779 Sep 16 19:35	15°♋	
minimum elong	3773 Aug 23 07:54	2°♋08'30	0°51'01	evening set	3779 Oct 27 08:13	19°♋25'10	
max. Earth dist.	3773 Aug 23 09:59	2°♋09'10	10.13745 AU	conjunction	3779 Nov 13 12:56	21°♋31'01	2°08'22
morning rise	3773 Sep 10 08:33	4°♋26'43		minimum elong	3779 Nov 13 12:57	21°♋31'01	2°08'23
retrograde	3773 Dec 22 20:19	12°♋27'58		max. Earth dist.	3779 Nov 13 12:37	21°♋30'55	10.61765 AU
opposition	3774 Feb 27 12:59	9°♋01'25	1°20'58	morning rise	3779 Nov 30 13:12	23°♋35'35	
min. Earth dist.	3774 Feb 27 11:23	9°♋01'45	8.15915 AU		3780 Feb 06 00:56	0°♌	
direct	3774 May 06 06:21	5°♋32'23		retrograde	3780 Mar 09 14:08	0°♌55'20	
evening set	3774 Aug 19 23:54	13°♋40'34			3780 Apr 11 15:51	30°♋♋	
conjunction	3774 Sep 06 23:51	15°♋57'51	1°18'17	opposition	3780 May 16 16:29	27°♋35'14	2°33'33
minimum elong	3774 Sep 06 23:48	15°♋57'50	1°18'17	min. Earth dist.	3780 May 16 17:13	27°♋35'06	8.66585 AU
max. Earth dist.	3774 Sep 07 01:26	15°♋58'22	10.18536 AU	direct	3780 Jul 26 01:04	24°♋10'08	
morning rise	3774 Sep 24 21:04	18°♋14'19			3780 Oct 24 00:15	0°♌	
retrograde	3775 Jan 05 14:29	26°♋09'25		evening set	3780 Nov 08 02:17	1°♌45'03	
opposition	3775 Mar 13 07:43	22°♋43'53	1°51'59	conjunction	3780 Nov 25 03:46	3°♌48'53	1°59'36
min. Earth dist.	3775 Mar 13 06:52	22°♋44'04	8.21721 AU	minimum elong	3780 Nov 25 03:48	3°♌48'53	1°59'36
direct	3775 May 20 11:44	19°♋14'52		max. Earth dist.	3780 Nov 25 02:31	3°♌48'30	10.71008 AU
evening set	3775 Sep 03 13:14	27°♋20'29		morning rise	3780 Dec 12 01:15	5°♌51'33	
conjunction	3775 Sep 21 09:42	29°♋35'48	1°40'48	retrograde	3781 Mar 21 20:34	13°♌05'39	
minimum elong	3775 Sep 21 09:39	29°♋35'47	1°40'48	opposition	3781 May 29 10:15	9°♌46'27	2°19'14
max. Earth dist.	3775 Sep 21 10:15	29°♋35'58	10.25202 AU	min. Earth dist.	3781 May 29 11:39	9°♌46'11	8.75441 AU
	3775 Sep 24 13:52	0°♌		direct	3781 Aug 08 02:05	6°♌22'32	
morning rise	3775 Oct 09 02:46	1°♌50'02		evening set	3781 Nov 20 12:14	13°♌50'26	
retrograde	3776 Jan 19 02:42	9°♌38'10		conjunction	3781 Dec 07 11:03	15°♌52'31	1°45'38
opposition	3776 Mar 25 22:48	6°♌13'43	2°16'15	minimum elong	3781 Dec 07 11:06	15°♌52'32	1°45'38
min. Earth dist.	3776 Mar 25 22:38	6°♌13'45	8.29208 AU	max. Earth dist.	3781 Dec 07 09:01	15°♌51'54	10.79423 AU
direct	3776 Jun 02 14:26	2°♌45'00		morning rise	3781 Dec 24 06:32	17°♌53'36	
evening set	3776 Sep 16 19:28	10°♌46'26		retrograde	3782 Apr 03 00:43	25°♌03'09	
				opposition	3782 Jun 11 00:22	21°♌44'37	1°59'05
				min. Earth dist.	3782 Jun 11 01:42	21°♌44'22	8.83280 AU
				direct	3782 Aug 20 21:09	18°♌21'54	



evening set	3782 Dec 02 15:04	25° $\mathbb{A}$ 43'17		retrograde	3788 Jun 12 08:10	4° $\mathbb{H}$ 35'18	
				opposition	3788 Aug 22 00:41	1° $\mathbb{H}$ 15'52	-1°00'-24
conjunction	3782 Dec 19 11:54	27° $\mathbb{A}$ 43'58	1°27'19	min. Earth dist.	3788 Aug 22 01:41	1° $\mathbb{H}$ 15'41	8.95403 AU
minimum elong	3782 Dec 19 11:56	27° $\mathbb{A}$ 43'58	1°27'19		3788 Sep 08 12:10	30° $\mathbb{R}$ $\mathbb{A}$	
max. Earth dist.	3782 Dec 19 10:04	27° $\mathbb{A}$ 43'25	10.86654 AU	direct	3788 Oct 31 03:19	27° $\mathbb{A}$ 57'23	
morning rise	3783 Jan 05 05:51	29° $\mathbb{A}$ 43'47			3788 Dec 20 14:54	0° $\mathbb{H}$	
	3783 Jan 07 13:15	0° $\mathbb{B}$		evening set	3789 Feb 08 12:48	5° $\mathbb{H}$ 02'01	
retrograde	3783 Apr 15 02:09	6° $\mathbb{B}$ 49'59					
opposition	3783 Jun 23 11:28	3° $\mathbb{B}$ 31'54	1°34'14	conjunction	3789 Feb 25 04:52	7° $\mathbb{H}$ 00'40	-1°-1'-22
min. Earth dist.	3783 Jun 23 12:15	3° $\mathbb{B}$ 31'45	8.89771 AU	minimum elong	3789 Feb 25 04:50	7° $\mathbb{H}$ 00'40	1°01'23
direct	3783 Sep 02 10:31	0° $\mathbb{B}$ 10'19		max. Earth dist.	3789 Feb 25 02:58	7° $\mathbb{H}$ 00'06	10.93211 AU
evening set	3783 Dec 14 12:22	7° $\mathbb{B}$ 25'59		morning rise	3789 Mar 13 22:27	8° $\mathbb{H}$ 59'49	
				retrograde	3789 Jun 24 17:06	16° $\mathbb{H}$ 14'31	
conjunction	3783 Dec 31 07:38	9° $\mathbb{B}$ 25'33	1°05'33	opposition	3789 Sep 03 10:19	12° $\mathbb{H}$ 54'10	-1°-29'-21
minimum elong	3783 Dec 31 07:40	9° $\mathbb{B}$ 25'33	1°05'33	min. Earth dist.	3789 Sep 03 11:46	12° $\mathbb{H}$ 53'54	8.90611 AU
max. Earth dist.	3783 Dec 31 06:29	9° $\mathbb{B}$ 25'12	10.92399 AU	direct	3789 Nov 12 03:51	9° $\mathbb{H}$ 35'38	
morning rise	3784 Jan 17 00:27	11° $\mathbb{B}$ 24'27		evening set	3790 Feb 20 06:50	16° $\mathbb{H}$ 42'10	
retrograde	3784 Apr 26 03:07	18° $\mathbb{B}$ 28'35					
opposition	3784 Jul 04 20:20	15° $\mathbb{B}$ 10'44	1°05'49	conjunction	3790 Mar 08 23:20	18° $\mathbb{H}$ 41'39	-1°-23'-39
min. Earth dist.	3784 Jul 04 21:19	15° $\mathbb{B}$ 10'33	8.94665 AU	minimum elong	3790 Mar 08 23:18	18° $\mathbb{H}$ 41'38	1°23'40
direct	3784 Sep 13 19:24	11° $\mathbb{B}$ 50'10		max. Earth dist.	3790 Mar 08 20:39	18° $\mathbb{H}$ 40'50	10.87500 AU
evening set	3784 Dec 25 05:33	19° $\mathbb{B}$ 01'07		morning rise	3790 Mar 25 18:20	20° $\mathbb{H}$ 41'52	
				retrograde	3790 Jul 07 05:59	28° $\mathbb{H}$ 02'33	
conjunction	3785 Jan 10 23:27	20° $\mathbb{B}$ 59'52	0°41'18	opposition	3790 Sep 15 22:24	24° $\mathbb{H}$ 41'05	-1°-54'-57
minimum elong	3785 Jan 10 23:28	20° $\mathbb{B}$ 59'53	0°41'18	min. Earth dist.	3790 Sep 16 00:15	24° $\mathbb{H}$ 40'45	8.84094 AU
max. Earth dist.	3785 Jan 10 21:56	20° $\mathbb{B}$ 59'25	10.96446 AU	direct	3790 Nov 24 05:15	21° $\mathbb{H}$ 22'16	
morning rise	3785 Jan 27 15:43	22° $\mathbb{B}$ 58'11		evening set	3791 Mar 04 05:09	28° $\mathbb{H}$ 31'59	
	3785 May 02 09:06	0° $\mathbb{A}$			3791 Mar 16 10:55	0° $\mathbb{Y}$	
retrograde	3785 May 08 02:12	0° $\mathbb{A}$ 01'37					
	3785 May 13 19:32	30° $\mathbb{R}$ $\mathbb{B}$		conjunction	3791 Mar 20 22:48	0° $\mathbb{Y}$ 32'38	-1°-42'-39
opposition	3785 Jul 17 03:50	26° $\mathbb{B}$ 43'46	0°34'59	minimum elong	3791 Mar 20 22:46	0° $\mathbb{Y}$ 32'37	1°42'40
min. Earth dist.	3785 Jul 17 05:25	26° $\mathbb{B}$ 43'28	8.97792 AU	max. Earth dist.	3791 Mar 20 20:39	0° $\mathbb{Y}$ 31'59	10.80207 AU
direct	3785 Sep 25 23:25	23° $\mathbb{B}$ 24'01		morning rise	3791 Apr 06 19:33	2° $\mathbb{Y}$ 34'14	
	3786 Jan 01 06:55	0° $\mathbb{A}$		retrograde	3791 Jul 19 23:03	10° $\mathbb{Y}$ 01'48	
evening set	3786 Jan 05 19:48	0° $\mathbb{A}$ 31'24		opposition	3791 Sep 28 13:53	6° $\mathbb{Y}$ 39'05	-2°-16'-2
				min. Earth dist.	3791 Sep 28 15:10	6° $\mathbb{Y}$ 38'50	8.76157 AU
conjunction	3786 Jan 22 12:40	2° $\mathbb{A}$ 29'38	0°15'32	direct	3791 Dec 06 11:17	3° $\mathbb{Y}$ 19'43	
minimum elong	3786 Jan 22 12:40	2° $\mathbb{A}$ 29'38	0°15'33	evening set	3792 Mar 15 08:54	10° $\mathbb{Y}$ 33'44	
behind sun begin	3786 Jan 22 10:34	2° $\mathbb{A}$ 29'01					
behind sun end	3786 Jan 22 14:47	2° $\mathbb{A}$ 30'16		conjunction	3792 Apr 01 04:22	12° $\mathbb{Y}$ 35'55	-1°-57'-28
max. Earth dist.	3786 Jan 22 10:22	2° $\mathbb{A}$ 28'58	10.98645 AU	minimum elong	3792 Apr 01 04:20	12° $\mathbb{Y}$ 35'54	1°57'29
morning rise	3786 Feb 08 04:54	4° $\mathbb{A}$ 27'41		max. Earth dist.	3792 Apr 01 03:35	12° $\mathbb{Y}$ 35'41	10.71663 AU
retrograde	3786 May 20 01:08	11° $\mathbb{A}$ 31'51		morning rise	3792 Apr 18 03:19	14° $\mathbb{Y}$ 39'11	
opposition	3786 Jul 29 10:30	8° $\mathbb{A}$ 13'43	0°02'54	retrograde	3792 Aug 01 00:21	22° $\mathbb{Y}$ 14'17	
min. Earth dist.	3786 Jul 29 12:17	8° $\mathbb{A}$ 13'23	8.99014 AU	opposition	3792 Oct 10 09:13	18° $\mathbb{Y}$ 50'13	-2°-31'-29
desc. node	3786 Sep 01 06:00	5° $\mathbb{A}$ 57'32		min. Earth dist.	3792 Oct 10 09:21	18° $\mathbb{Y}$ 50'11	8.67152 AU
direct	3786 Oct 08 02:53	4° $\mathbb{A}$ 54'35		direct	3792 Dec 17 20:04	15° $\mathbb{Y}$ 30'09	
evening set	3787 Jan 17 08:51	11° $\mathbb{A}$ 59'41		evening set	3793 Mar 27 19:26	22° $\mathbb{Y}$ 49'26	
conjunction	3787 Feb 03 01:08	13° $\mathbb{A}$ 57'44	0°-10'-52	conjunction	3793 Apr 13 17:23	24° $\mathbb{Y}$ 53'27	-2°-7'-12
minimum elong	3787 Feb 03 01:07	13° $\mathbb{A}$ 57'44	0°10'52	minimum elong	3793 Apr 13 17:22	24° $\mathbb{Y}$ 53'27	2°07'13
behind sun begin	3787 Feb 02 19:45	13° $\mathbb{A}$ 56'10		max. Earth dist.	3793 Apr 13 17:14	24° $\mathbb{Y}$ 53'25	10.62250 AU
behind sun end	3787 Feb 03 06:29	13° $\mathbb{A}$ 59'18		morning rise	3793 Apr 30 19:15	26° $\mathbb{Y}$ 58'45	
max. Earth dist.	3787 Feb 02 23:04	13° $\mathbb{A}$ 57'08	10.98875 AU		3793 May 27 05:43	0° $\mathbb{B}$	
	3787 Feb 11 19:04	15° $\mathbb{A}$		retrograde	3793 Aug 14 07:45	4° $\mathbb{B}$ 41'32	
morning rise	3787 Feb 19 17:29	15° $\mathbb{A}$ 55'49		opposition	3793 Oct 23 08:39	1° $\mathbb{B}$ 16'09	-2°-40'-16
retrograde	3787 Jun 01 03:44	23° $\mathbb{A}$ 02'05		min. Earth dist.	3793 Oct 23 08:13	1° $\mathbb{B}$ 16'14	8.57479 AU
opposition	3787 Aug 10 17:00	19° $\mathbb{A}$ 43'25	0°-29'-16		3793 Nov 09 03:36	30° $\mathbb{R}$ $\mathbb{Y}$	
min. Earth dist.	3787 Aug 10 18:17	19° $\mathbb{A}$ 43'11	8.98232 AU	direct	3793 Dec 30 07:38	27° $\mathbb{Y}$ 55'11	
direct	3787 Oct 20 04:20	16° $\mathbb{A}$ 24'43			3794 Feb 17 16:04	0° $\mathbb{B}$	
evening set	3788 Jan 28 22:01	23° $\mathbb{A}$ 28'52		evening set	3794 Apr 09 13:33	5° $\mathbb{B}$ 20'36	
conjunction	3788 Feb 14 14:04	25° $\mathbb{A}$ 27'03	0°-36'-47	conjunction	3794 Apr 26 14:37	7° $\mathbb{B}$ 26'47	-2°-11'-7
minimum elong	3788 Feb 14 14:03	25° $\mathbb{A}$ 27'03	0°36'48	minimum elong	3794 Apr 26 14:38	7° $\mathbb{B}$ 26'47	2°11'08
max. Earth dist.	3788 Feb 14 12:32	25° $\mathbb{A}$ 26'36	10.97060 AU	max. Earth dist.	3794 Apr 26 14:24	7° $\mathbb{B}$ 26'43	10.52396 AU
morning rise	3788 Mar 02 06:46	27° $\mathbb{A}$ 25'30		morning rise	3794 May 13 20:08	9° $\mathbb{B}$ 34'21	
	3788 Mar 25 11:15	0° $\mathbb{H}$			3794 Jul 04 01:01	15° $\mathbb{B}$	



retrograde	3794 Aug 27 19:45	17°♄24'41		retrograde	3800 Nov 19 16:43	8°♄40'31	
	3794 Oct 23 04:06	15°♄		opposition	3801 Jan 25 19:49	5°♄11'46	0°-11'-57
opposition	3794 Nov 05 12:39	13°♄58'07	-2°-41'-30	min. Earth dist.	3801 Jan 25 17:44	5°♄12'11	8.09364 AU
min. Earth dist.	3794 Nov 05 12:14	13°♄58'12	8.47572 AU	direct	3801 Apr 02 16:44	1°♄43'24	
direct	3795 Jan 12 02:12	10°♄36'04		asc. node	3801 May 20 03:50	3°♄42'41	
	3795 Mar 26 14:39	15°♄		evening set	3801 Jul 16 01:06	9°♄50'41	
evening set	3795 Apr 22 15:39	18°♄08'13					
conjunction	3795 May 09 20:37	20°♄16'48	-2°-8'-39	conjunction	3801 Aug 03 04:14	12°♄10'18	0°06'21
minimum elong	3795 May 09 20:39	20°♄16'48	2°08'40	minimum elong	3801 Aug 03 04:13	12°♄10'18	0°06'21
max. Earth dist.	3795 May 09 20:40	20°♄16'49	10.42552 AU	behind sun begin	3801 Aug 02 21:17	12°♄08'05	
morning rise	3795 May 27 06:15	22°♄26'48		behind sun end	3801 Aug 03 11:08	12°♄12'31	
	3795 Aug 19 21:33	0°♄		max. Earth dist.	3801 Aug 03 06:20	12°♄10'57	10.09410 AU
retrograde	3795 Sep 10 13:36	0°♄24'11		morning rise	3801 Aug 21 07:38	14°♄30'00	
	3795 Oct 02 07:35	30°♄			3801 Aug 25 07:02	15°♄	
opposition	3795 Nov 18 21:10	26°♄56'34	-2°-34'-37	retrograde	3801 Dec 03 22:23	22°♄38'34	
min. Earth dist.	3795 Nov 18 20:41	26°♄56'40	8.37902 AU	opposition	3802 Feb 08 19:24	19°♄10'33	0°27'34
direct	3796 Jan 25 02:55	23°♄33'23		min. Earth dist.	3802 Feb 08 17:32	19°♄10'56	8.10071 AU
	3796 Apr 25 04:17	0°♄		direct	3802 Apr 16 23:15	15°♄41'43	
evening set	3796 May 05 02:21	1°♄12'31		evening set	3802 Jul 30 22:53	23°♄50'56	
conjunction	3796 May 22 11:54	3°♄23'39	-1°-59'-32	conjunction	3802 Aug 18 01:47	26°♄10'11	0°37'37
minimum elong	3796 May 22 11:57	3°♄23'40	1°59'33	minimum elong	3802 Aug 18 01:45	26°♄10'11	0°37'37
max. Earth dist.	3796 May 22 12:51	3°♄23'57	10.33203 AU	max. Earth dist.	3802 Aug 18 03:52	26°♄10'51	10.11327 AU
morning rise	3796 Jun 09 01:56	5°♄36'12		morning rise	3802 Sep 05 03:46	28°♄29'09	
retrograde	3796 Sep 23 13:12	13°♄39'37			3802 Sep 17 09:13	0°♄	
opposition	3796 Dec 01 09:52	10°♄11'10	-2°-19'-26	retrograde	3802 Dec 17 23:50	6°♄33'23	
min. Earth dist.	3796 Dec 01 08:53	10°♄11'22	8.28963 AU	opposition	3803 Feb 22 18:01	3°♄06'19	1°05'17
direct	3797 Feb 06 09:08	6°♄46'47		min. Earth dist.	3803 Feb 22 15:57	3°♄06'45	8.13189 AU
evening set	3797 May 18 21:39	14°♄32'55			3803 Apr 10 19:44	30°♄	
conjunction	3797 Jun 05 12:06	16°♄46'36	-1°-43'-51	direct	3803 May 01 07:07	29°♄37'18	
minimum elong	3797 Jun 05 12:09	16°♄46'37	1°43'52		3803 May 21 16:11	0°♄	
max. Earth dist.	3797 Jun 05 14:13	16°♄47'16	10.24830 AU	evening set	3803 Aug 14 19:15	7°♄46'34	
morning rise	3797 Jun 23 06:29	19°♄01'34		conjunction	3803 Sep 01 20:28	10°♄04'43	1°06'32
retrograde	3797 Oct 07 17:07	27°♄09'38		minimum elong	3803 Sep 01 20:26	10°♄04'42	1°06'32
opposition	3797 Dec 15 02:25	23°♄40'37	-1°-56'-18	max. Earth dist.	3803 Sep 01 22:43	10°♄05'26	10.15563 AU
min. Earth dist.	3797 Dec 15 00:32	23°♄40'59	8.21225 AU	morning rise	3803 Sep 19 19:35	12°♄22'11	
direct	3798 Feb 19 21:34	20°♄15'04		retrograde	3803 Dec 31 21:16	20°♄20'44	
evening set	3798 Jun 02 01:11	28°♄07'52		opposition	3804 Mar 07 14:32	16°♄54'47	1°38'49
	3798 Jun 16 17:48	0°♄		min. Earth dist.	3804 Mar 07 12:12	16°♄55'15	8.18514 AU
conjunction	3798 Jun 19 20:15	0°♄23'52	-1°-22'-10	direct	3804 May 14 13:22	13°♄25'53	
minimum elong	3798 Jun 19 20:18	0°♄23'53	1°22'11	evening set	3804 Aug 28 11:56	21°♄33'20	
max. Earth dist.	3798 Jun 19 23:00	0°♄24'45	10.17892 AU	conjunction	3804 Sep 15 10:13	23°♄49'41	1°31'21
morning rise	3798 Jul 07 18:30	2°♄40'56		minimum elong	3804 Sep 15 10:09	23°♄49'40	1°31'21
retrograde	3798 Oct 21 23:42	10°♄52'00		max. Earth dist.	3804 Sep 15 12:35	23°♄50'27	10.21843 AU
opposition	3798 Dec 28 22:10	7°♄22'43	-1°-26'-12	morning rise	3804 Oct 03 05:17	26°♄05'04	
min. Earth dist.	3798 Dec 28 19:44	7°♄23'13	8.15139 AU		3804 Nov 05 22:29	0°♄	
direct	3799 Mar 05 15:29	3°♄56'06		retrograde	3805 Jan 13 13:52	3°♄56'52	
evening set	3799 Jun 16 12:00	11°♄54'51		opposition	3805 Mar 21 07:54	0°♄32'09	2°06'15
conjunction	3799 Jul 04 10:59	14°♄12'45	0°-55'-31	min. Earth dist.	3805 Mar 21 05:38	0°♄32'36	8.25706 AU
minimum elong	3799 Jul 04 11:01	14°♄12'46	0°55'33		3805 Mar 27 23:43	30°♄	
max. Earth dist.	3799 Jul 04 13:55	14°♄13'41	10.12814 AU	direct	3805 May 28 17:31	27°♄03'37	
morning rise	3799 Jul 22 12:19	16°♄31'25			3805 Jul 27 14:20	0°♄	
retrograde	3799 Nov 05 08:25	24°♄43'34		evening set	3805 Sep 11 22:20	5°♄07'27	
opposition	3800 Jan 11 20:19	21°♄14'23	0°-50'-42	conjunction	3805 Sep 29 16:47	7°♄21'34	1°50'44
min. Earth dist.	3800 Jan 11 17:49	21°♄14'54	8.11097 AU	minimum elong	3805 Sep 29 16:44	7°♄21'33	1°50'44
direct	3800 Mar 19 13:38	17°♄46'47		max. Earth dist.	3805 Sep 29 19:03	7°♄22'17	10.29776 AU
evening set	3800 Jul 01 04:35	25°♄50'28		morning rise	3805 Oct 17 07:16	9°♄34'30	
conjunction	3800 Jul 19 06:23	28°♄09'38	0°-25'-25	retrograde	3806 Jan 26 23:44	17°♄18'55	
minimum elong	3800 Jul 19 06:24	28°♄09'38	0°25'27	opposition	3806 Apr 03 21:36	13°♄55'27	2°26'15
max. Earth dist.	3800 Jul 19 08:58	28°♄10'28	10.09924 AU	min. Earth dist.	3806 Apr 03 20:06	13°♄55'45	8.34317 AU
	3800 Aug 02 13:32	0°♄		direct	3806 Jun 11 18:41	10°♄27'31	
morning rise	3800 Aug 06 09:35	0°♄29'13		evening set	3806 Sep 26 00:29	18°♄26'10	
				conjunction	3806 Oct 13 14:41	20°♄37'48	2°03'50



minimum elong	3806 Oct 13 14:39	20°♄37'48	2°03'51	conjunction	3812 Dec 26 16:09	4°♄42'05	1°15'08
max. Earth dist.	3806 Oct 13 15:58	20°♄38'12	10.38872 AU	minimum elong	3812 Dec 26 16:12	4°♄42'06	1°15'08
morning rise	3806 Oct 31 00:34	22°♄48'10		max. Earth dist.	3812 Dec 26 12:33	4°♄41'01	10.88994 AU
	3807 Jan 18 16:16	0°♄		morning rise	3813 Jan 12 09:35	6°♄41'33	
retrograde	3807 Feb 09 02:04	0°♄24'58		retrograde	3813 Apr 22 08:48	13°♄47'08	
	3807 Mar 02 15:16	30°♄		opposition	3813 Jun 30 22:57	10°♄29'05	1°18'14
opposition	3807 Apr 17 06:49	27°♄02'44	2°38'08	min. Earth dist.	3813 Jul 01 01:44	10°♄28'34	8.91397 AU
min. Earth dist.	3807 Apr 17 06:30	27°♄02'48	8.43803 AU	direct	3813 Sep 09 22:07	7°♄07'50	
direct	3807 Jun 25 15:49	23°♄35'32		evening set	3813 Dec 21 15:33	14°♄21'30	
	3807 Sep 27 11:03	0°♄					
evening set	3807 Oct 09 17:36	1°♄27'54		conjunction	3814 Jan 07 10:03	16°♄20'47	0°51'48
				minimum elong	3814 Jan 07 10:05	16°♄20'47	0°51'49
conjunction	3807 Oct 27 03:34	3°♄37'03	2°10'19	max. Earth dist.	3814 Jan 07 06:48	16°♄19'49	10.93315 AU
minimum elong	3807 Oct 27 03:33	3°♄37'02	2°10'19	morning rise	3814 Jan 24 02:46	18°♄19'32	
max. Earth dist.	3807 Oct 27 03:09	3°♄36'55	10.48551 AU	retrograde	3814 May 04 09:12	25°♄23'53	
morning rise	3807 Nov 13 09:13	5°♄44'52		opposition	3814 Jul 13 07:18	22°♄05'42	0°48'15
retrograde	3808 Feb 21 22:29	13°♄14'16		min. Earth dist.	3814 Jul 13 09:26	22°♄05'18	8.94839 AU
opposition	3808 Apr 29 11:14	9°♄53'11	2°41'45	direct	3814 Sep 22 05:22	18°♄45'11	
min. Earth dist.	3808 Apr 29 12:02	9°♄53'01	8.53556 AU	evening set	3815 Jan 02 07:16	25°♄54'49	
direct	3808 Jul 08 06:58	6°♄26'55					
evening set	3808 Oct 22 01:13	14°♄12'23		conjunction	3815 Jan 19 00:50	27°♄53'30	0°26'32
	3808 Oct 28 13:55	15°♄		minimum elong	3815 Jan 19 00:51	27°♄53'30	0°26'32
				max. Earth dist.	3815 Jan 18 22:28	27°♄52'48	10.95884 AU
conjunction	3808 Nov 08 07:19	16°♄19'11	2°10'13	morning rise	3815 Feb 04 17:06	29°♄51'52	
minimum elong	3808 Nov 08 07:20	16°♄19'11	2°10'13		3815 Feb 05 21:05	0°♄	
max. Earth dist.	3808 Nov 08 05:25	16°♄18'36	10.58220 AU	retrograde	3815 May 16 09:07	6°♄56'23	
morning rise	3808 Nov 25 09:14	18°♄24'42		opposition	3815 Jul 25 14:36	3°♄37'52	0°16'30
retrograde	3809 Mar 05 12:47	25°♄47'22		min. Earth dist.	3815 Jul 25 16:15	3°♄37'33	8.96482 AU
opposition	3809 May 12 11:18	22°♄27'18	2°37'29	direct	3815 Oct 04 09:29	0°♄17'56	
min. Earth dist.	3809 May 12 12:23	22°♄27'06	8.63029 AU	evening set	3816 Jan 13 21:07	7°♄24'46	
direct	3809 Jul 21 16:44	19°♄02'07					
evening set	3809 Nov 03 23:27	26°♄40'29		conjunction	3816 Jan 30 13:49	9°♄23'08	0°00'15
				minimum elong	3816 Jan 30 13:49	9°♄23'08	0°00'15
conjunction	3809 Nov 21 02:18	28°♄45'12	2°03'56	behind sun begin	3816 Jan 30 06:53	9°♄21'06	
minimum elong	3809 Nov 21 02:20	28°♄45'12	2°03'56	behind sun end	3816 Jan 30 20:44	9°♄25'10	
max. Earth dist.	3809 Nov 21 00:12	28°♄44'33	10.67415 AU	max. Earth dist.	3816 Jan 30 11:36	9°♄22'33	10.96609 AU
	3809 Dec 01 07:29	0°♄		desc. node	3816 Feb 03 00:49	9°♄47'50	
morning rise	3809 Dec 08 01:03	0°♄48'42		morning rise	3816 Feb 16 06:04	11°♄21'26	
retrograde	3810 Mar 17 23:02	8°♄05'33			3816 Mar 21 04:35	15°♄	
opposition	3810 May 25 07:15	4°♄46'20	2°26'01	retrograde	3816 May 27 11:05	18°♄27'32	
min. Earth dist.	3810 May 25 08:29	4°♄46'06	8.71840 AU	opposition	3816 Aug 05 21:44	15°♄08'30	0°-15'-50
direct	3810 Aug 03 20:39	1°♄22'15		min. Earth dist.	3816 Aug 05 23:42	15°♄08'08	8.96279 AU
evening set	3810 Nov 16 13:25	8°♄53'37			3816 Aug 07 19:31	15°♄	
				direct	3816 Oct 15 11:05	11°♄49'00	
conjunction	3810 Dec 03 13:34	10°♄56'31	1°52'07		3816 Dec 18 16:35	15°♄	
minimum elong	3810 Dec 03 13:36	10°♄56'32	1°52'07	evening set	3817 Jan 24 10:33	18°♄54'20	
max. Earth dist.	3810 Dec 03 11:32	10°♄55'54	10.75803 AU				
morning rise	3810 Dec 20 09:48	12°♄58'20		conjunction	3817 Feb 10 02:40	20°♄52'43	0°-26'-2
retrograde	3811 Mar 30 06:40	20°♄10'16		minimum elong	3817 Feb 10 02:39	20°♄52'43	0°26'03
opposition	3811 Jun 06 23:22	16°♄51'42	2°08'16	max. Earth dist.	3817 Feb 09 23:57	20°♄51'54	10.95481 AU
min. Earth dist.	3811 Jun 07 01:17	16°♄51'20	8.79685 AU	morning rise	3817 Feb 26 19:23	22°♄51'16	
direct	3811 Aug 16 16:54	13°♄28'40			3817 Jun 05 23:50	0°♄	
evening set	3811 Nov 28 20:03	20°♄53'24		retrograde	3817 Jun 08 13:08	0°♄00'19	
					3817 Jun 11 02:46	30°♄	
conjunction	3811 Dec 15 17:51	22°♄54'49	1°35'33	opposition	3817 Aug 18 05:26	26°♄40'35	0°-47'-38
minimum elong	3811 Dec 15 17:54	22°♄54'50	1°35'33	min. Earth dist.	3817 Aug 18 07:23	26°♄40'13	8.94244 AU
max. Earth dist.	3811 Dec 15 15:10	22°♄54'01	10.83085 AU	direct	3817 Oct 27 10:57	23°♄21'20	
morning rise	3812 Jan 01 12:22	24°♄55'17			3818 Feb 01 05:23	0°♄	
	3812 Feb 20 07:32	0°♄		evening set	3818 Feb 05 00:50	0°♄26'34	
retrograde	3812 Apr 10 08:27	2°♄03'23					
	3812 Jun 01 12:18	30°♄		conjunction	3818 Feb 21 16:54	2°♄25'15	0°-51'-21
opposition	3812 Jun 18 12:29	28°♄45'14	1°45'17	minimum elong	3818 Feb 21 16:53	2°♄25'15	0°51'23
min. Earth dist.	3812 Jun 18 15:17	28°♄44'42	8.86284 AU	max. Earth dist.	3818 Feb 21 14:45	2°♄24'36	10.92531 AU
direct	3812 Aug 28 09:08	25°♄23'08		morning rise	3818 Mar 10 10:20	4°♄24'21	
	3812 Nov 15 15:43	0°♄		retrograde	3818 Jun 20 20:13	11°♄37'42	
evening set	3812 Dec 09 20:17	2°♄41'55		opposition	3818 Aug 30 14:29	8°♄17'06	-1°-17'-42
				min. Earth dist.	3818 Aug 30 15:39	8°♄16'53	8.90430 AU



direct	3818 Nov 08 13:14	4° <del>✕</del> 57'56		conjunction	3825 May 18 05:11	28° <del>8</del> 12'45	-2°-3'-56
evening set	3819 Feb 16 17:39	12° <del>✕</del> 04'23		minimum elong	3825 May 18 05:13	28° <del>8</del> 12'46	2°03'57
				max. Earth dist.	3825 May 18 08:02	28° <del>8</del> 13'40	10.38144 AU
conjunction	3819 Mar 05 10:08	14° <del>✕</del> 03'44	-1°-14'-45		3825 Jun 01 11:12	0° <del>II</del>	
minimum elong	3819 Mar 05 10:06	14° <del>✕</del> 03'43	1°14'46	morning rise	3825 Jun 04 17:09	0° <del>II</del> 24'07	
max. Earth dist.	3819 Mar 05 09:17	14° <del>✕</del> 03'28	10.87846 AU	retrograde	3825 Sep 19 05:03	8° <del>II</del> 24'50	
morning rise	3819 Mar 22 04:28	16° <del>✕</del> 03'41		opposition	3825 Nov 27 04:44	4° <del>II</del> 57'14	-2°-26'-25
retrograde	3819 Jul 03 08:30	23° <del>✕</del> 22'29		min. Earth dist.	3825 Nov 27 02:08	4° <del>II</del> 57'45	8.33987 AU
opposition	3819 Sep 12 01:44	20° <del>✕</del> 00'53	-1°-44'-52	direct	3826 Feb 02 05:00	1° <del>II</del> 33'58	
min. Earth dist.	3819 Sep 12 01:48	20° <del>✕</del> 00'52	8.84965 AU	evening set	3826 May 14 13:33	9° <del>II</del> 16'45	
direct	3819 Nov 20 14:15	16° <del>✕</del> 41'40					
evening set	3820 Feb 28 14:21	23° <del>✕</del> 50'36		conjunction	3826 Jun 01 01:43	11° <del>II</del> 29'11	-1°-50'-54
				minimum elong	3826 Jun 01 01:46	11° <del>II</del> 29'12	1°50'55
conjunction	3820 Mar 16 07:35	25° <del>✕</del> 50'55	-1°-35'-15	max. Earth dist.	3826 Jun 01 04:04	11° <del>II</del> 29'56	10.29830 AU
minimum elong	3820 Mar 16 07:33	25° <del>✕</del> 50'55	1°35'16	morning rise	3826 Jun 18 18:10	13° <del>II</del> 42'57	
max. Earth dist.	3820 Mar 16 07:08	25° <del>✕</del> 50'47	10.81609 AU	retrograde	3826 Oct 03 06:46	21° <del>II</del> 48'37	
morning rise	3820 Apr 02 03:26	27° <del>✕</del> 52'05		opposition	3826 Dec 10 19:48	18° <del>II</del> 20'27	-2°-6'-28
	3820 Apr 20 19:33	0° <del>Y</del>		min. Earth dist.	3826 Dec 10 17:45	18° <del>II</del> 20'52	8.26142 AU
retrograde	3820 Jul 15 01:01	5° <del>Y</del> 17'17		direct	3827 Feb 15 15:22	14° <del>II</del> 56'03	
opposition	3820 Sep 23 16:12	1° <del>Y</del> 54'38	-2°-7'-58	evening set	3827 May 28 13:24	22° <del>II</del> 45'24	
min. Earth dist.	3820 Sep 23 15:57	1° <del>Y</del> 54'41	8.78072 AU				
	3820 Oct 20 13:20	30° <del>R</del> <del>✕</del>		conjunction	3827 Jun 15 06:15	25° <del>II</del> 00'11	-1°-31'-36
direct	3820 Dec 01 17:08	28° <del>✕</del> 35'09		minimum elong	3827 Jun 15 06:18	25° <del>II</del> 00'12	1°31'38
	3821 Jan 11 17:12	0° <del>Y</del>		max. Earth dist.	3827 Jun 15 08:17	25° <del>II</del> 00'50	10.22600 AU
evening set	3821 Mar 11 16:04	5° <del>Y</del> 47'47		morning rise	3827 Jul 03 02:56	27° <del>II</del> 16'09	
					3827 Jul 25 21:08	0° <del>☾</del>	
conjunction	3821 Mar 28 10:38	7° <del>Y</del> 49'25	-1°-51'-54	retrograde	3827 Oct 17 11:14	5° <del>☾</del> 25'20	
minimum elong	3821 Mar 28 10:36	7° <del>Y</del> 49'25	1°51'55	opposition	3827 Dec 24 14:09	1° <del>☾</del> 56'49	-1°-39'-7
max. Earth dist.	3821 Mar 28 10:07	7° <del>Y</del> 49'16	10.74079 AU	min. Earth dist.	3827 Dec 24 12:32	1° <del>☾</del> 57'09	8.19548 AU
morning rise	3821 Apr 14 08:40	9° <del>Y</del> 52'06			3828 Jan 19 03:04	30° <del>R</del> <del>II</del>	
retrograde	3821 Jul 27 23:22	17° <del>Y</del> 24'26		direct	3828 Feb 29 07:45	28° <del>II</del> 31'18	
opposition	3821 Oct 06 10:19	14° <del>Y</del> 00'41	-2°-25'-52		3828 Apr 09 19:42	0° <del>☾</del>	
min. Earth dist.	3821 Oct 06 10:05	14° <del>Y</del> 00'43	8.70031 AU	evening set	3828 Jun 10 20:53	6° <del>☾</del> 26'47	
direct	3821 Dec 14 00:24	10° <del>Y</del> 40'44					
evening set	3822 Mar 24 00:04	17° <del>Y</del> 58'09		conjunction	3828 Jun 28 18:06	8° <del>☾</del> 43'40	-1°-6'-53
				minimum elong	3828 Jun 28 18:09	8° <del>☾</del> 43'41	1°06'55
conjunction	3822 Apr 09 20:46	20° <del>Y</del> 01'27	-2°-3'-49	max. Earth dist.	3828 Jun 28 20:05	8° <del>☾</del> 44'18	10.16802 AU
minimum elong	3822 Apr 09 20:45	20° <del>Y</del> 01'26	2°03'49	morning rise	3828 Jul 16 18:18	11° <del>☾</del> 01'28	
max. Earth dist.	3822 Apr 09 20:42	20° <del>Y</del> 01'26	10.65568 AU	retrograde	3828 Oct 30 18:19	19° <del>☾</del> 12'30	
morning rise	3822 Apr 26 21:29	22° <del>Y</del> 05'58		opposition	3829 Jan 06 10:54	15° <del>☾</del> 43'57	-1°-5'-42
retrograde	3822 Aug 10 03:02	29° <del>Y</del> 45'48		min. Earth dist.	3829 Jan 06 09:18	15° <del>☾</del> 44'16	8.14587 AU
opposition	3822 Oct 19 08:18	26° <del>Y</del> 20'57	-2°-37'-28	direct	3829 Mar 14 04:04	12° <del>☾</del> 17'23	
min. Earth dist.	3822 Oct 19 07:47	26° <del>Y</del> 21'03	8.61186 AU	evening set	3829 Jun 25 10:51	20° <del>☾</del> 18'18	
direct	3822 Dec 26 11:50	23° <del>Y</del> 00'22					
	3823 Apr 02 09:18	0° <del>8</del>		conjunction	3829 Jul 13 11:32	22° <del>☾</del> 36'44	0°-38'-4
evening set	3823 Apr 05 15:10	0° <del>8</del> 23'28		minimum elong	3829 Jul 13 11:34	22° <del>☾</del> 36'45	0°38'06
				max. Earth dist.	3829 Jul 13 13:45	22° <del>☾</del> 37'27	10.12838 AU
conjunction	3823 Apr 22 14:50	2° <del>8</del> 28'44	-2°-10'-10	morning rise	3829 Jul 31 14:02	24° <del>☾</del> 55'46	
minimum elong	3823 Apr 22 14:50	2° <del>8</del> 28'44	2°10'11		3829 Sep 14 08:23	0° <del>♈</del>	
max. Earth dist.	3823 Apr 22 16:17	2° <del>8</del> 29'11	10.56454 AU	retrograde	3829 Nov 14 02:30	3° <del>♈</del> 06'51	
morning rise	3823 May 09 18:43	4° <del>8</del> 35'21			3830 Jan 16 00:18	30° <del>R</del> <del>☾</del>	
retrograde	3823 Aug 23 13:03	12° <del>8</del> 22'45		opposition	3830 Jan 20 09:28	29° <del>☾</del> 38'29	0°-28'-7
opposition	3823 Nov 01 10:47	8° <del>8</del> 56'50	-2°-41'-49	min. Earth dist.	3830 Jan 20 07:28	29° <del>☾</del> 38'54	8.11664 AU
min. Earth dist.	3823 Nov 01 09:09	8° <del>8</del> 57'09	8.51938 AU	direct	3830 Mar 28 05:16	26° <del>☾</del> 11'01	
direct	3824 Jan 08 04:52	5° <del>8</del> 35'31			3830 Jun 03 13:55	0° <del>♈</del>	
evening set	3824 Apr 17 14:05	13° <del>8</del> 04'52		evening set	3830 Jul 10 05:22	4° <del>♈</del> 16'08	
	3824 May 03 01:44	15° <del>8</del>					
conjunction	3824 May 04 17:27	15° <del>8</del> 12'24	-2°-10'-21	conjunction	3830 Jul 28 08:07	6° <del>♈</del> 35'24	0°-6'-54
minimum elong	3824 May 04 17:28	15° <del>8</del> 12'25	2°10'21	minimum elong	3830 Jul 28 08:07	6° <del>♈</del> 35'24	0°06'55
max. Earth dist.	3824 May 04 20:02	15° <del>8</del> 13'13	10.47164 AU	behind sun begin	3830 Jul 28 01:19	6° <del>♈</del> 33'14	
morning rise	3824 May 22 01:07	17° <del>8</del> 21'19		behind sun end	3830 Jul 28 14:55	6° <del>♈</del> 37'35	
retrograde	3824 Sep 05 06:29	25° <del>8</del> 15'51		max. Earth dist.	3830 Jul 28 10:44	6° <del>♈</del> 36'14	10.11056 AU
opposition	3824 Nov 13 17:42	21° <del>8</del> 49'00	-2°-38'-15	morning rise	3830 Aug 15 11:23	8° <del>♈</del> 54'54	
min. Earth dist.	3824 Nov 13 15:14	21° <del>8</del> 49'29	8.42724 AU		3830 Oct 10 18:14	15° <del>♈</del>	
direct	3825 Jan 20 02:11	18° <del>8</del> 26'47		asc. node	3830 Oct 18 05:20	15° <del>♈</del> 33'46	
evening set	3825 Apr 30 21:35	26° <del>8</del> 02'47		retrograde	3830 Nov 28 08:58	17° <del>♈</del> 04'08	
					3831 Jan 16 20:26	15° <del>R</del> <del>♈</del>	



opposition	3831 Feb 03 08:39	13°♈36'13	0°11'17	min. Earth dist.	3837 Apr 24 04:49	4°♍40'40	8.48771 AU
min. Earth dist.	3831 Feb 03 06:22	13°♈36'41	8.11046 AU	direct	3837 Jul 02 21:17	1°♍13'27	
direct	3831 Apr 11 09:45	10°♈08'01		evening set	3837 Oct 16 17:57	9°♍01'40	
	3831 Jun 27 20:00	15°♈					
evening set	3831 Jul 25 02:21	18°♈15'48		conjunction	3837 Nov 03 01:52	11°♍09'29	2°11'06
				minimum elong	3837 Nov 03 01:52	11°♍09'29	2°11'07
conjunction	3831 Aug 12 05:34	20°♈35'06	0°24'49	max. Earth dist.	3837 Nov 03 01:45	11°♍09'27	10.53471 AU
minimum elong	3831 Aug 12 05:32	20°♈35'05	0°24'48	morning rise	3837 Nov 20 05:14	13°♍15'57	
max. Earth dist.	3831 Aug 12 08:03	20°♈35'54	10.11628 AU		3837 Dec 04 21:32	15°♍	
morning rise	3831 Aug 30 08:05	22°♈54'14		retrograde	3838 Feb 28 12:19	20°♍41'13	
	3831 Nov 09 08:48	0°♏		opposition	3838 May 07 06:38	17°♍20'13	2°40'21
retrograde	3831 Dec 12 12:21	0°♏59'50		min. Earth dist.	3838 May 07 07:08	17°♍20'07	8.58427 AU
	3832 Jan 14 20:58	30°♏			3838 Jun 09 09:33	15°♏	
opposition	3832 Feb 17 07:12	27°♏32'36	0°49'57	direct	3838 Jul 16 08:07	13°♍54'04	
min. Earth dist.	3832 Feb 17 05:22	27°♏32'58	8.12810 AU		3838 Aug 21 22:55	15°♍	
direct	3832 Apr 24 15:50	24°♏03'52		evening set	3838 Oct 29 19:36	21°♍35'09	
	3832 Jul 20 20:23	0°♏					
evening set	3832 Aug 07 23:09	2°♏12'34		conjunction	3838 Nov 15 23:55	23°♍40'44	2°07'25
				minimum elong	3838 Nov 15 23:56	23°♍40'44	2°07'26
conjunction	3832 Aug 26 01:13	4°♏31'05	0°54'53	max. Earth dist.	3838 Nov 15 22:55	23°♍40'25	10.63053 AU
minimum elong	3832 Aug 26 01:10	4°♏31'05	0°54'53	morning rise	3838 Dec 02 23:57	25°♍45'03	
max. Earth dist.	3832 Aug 26 02:58	4°♏31'39	10.14532 AU		3839 Jan 10 23:38	0°♏	
morning rise	3832 Sep 13 01:30	6°♏49'04		retrograde	3839 Mar 12 22:58	3°♏03'55	
retrograde	3832 Dec 25 11:27	14°♏49'31			3839 May 16 15:56	30°♏	
opposition	3833 Mar 02 04:08	11°♏23'10	1°25'26	opposition	3839 May 20 03:42	29°♍43'54	2°31'53
min. Earth dist.	3833 Mar 02 02:59	11°♏23'24	8.16838 AU	min. Earth dist.	3839 May 20 05:03	29°♍43'38	8.67809 AU
direct	3833 May 08 21:55	7°♏54'11		direct	3839 Jul 29 14:02	26°♍18'51	
evening set	3833 Aug 22 16:59	16°♏01'56			3839 Oct 07 04:03	0°♏	
				evening set	3839 Nov 11 12:33	3°♏52'46	
conjunction	3833 Sep 09 16:28	18°♏18'58	1°21'34				
minimum elong	3833 Sep 09 16:25	18°♏18'57	1°21'34	conjunction	3839 Nov 28 13:44	5°♏56'22	1°57'56
max. Earth dist.	3833 Sep 09 17:21	18°♏19'15	10.19570 AU	minimum elong	3839 Nov 28 13:46	5°♏56'22	1°57'55
morning rise	3833 Sep 27 13:17	20°♏35'08		max. Earth dist.	3839 Nov 28 11:37	5°♏55'43	10.72151 AU
retrograde	3834 Jan 08 05:04	28°♏29'18		morning rise	3839 Dec 15 11:09	7°♏58'49	
opposition	3834 Mar 15 22:19	25°♏03'58	1°55'35	retrograde	3840 Mar 24 05:56	15°♏12'11	
min. Earth dist.	3834 Mar 15 21:44	25°♏04'05	8.22865 AU	opposition	3840 May 31 20:39	11°♏53'00	2°16'44
direct	3834 May 23 03:38	21°♏35'02		min. Earth dist.	3840 May 31 22:01	11°♏52'44	8.76488 AU
evening set	3834 Sep 06 05:24	29°♏40'00		direct	3840 Aug 10 13:41	8°♏29'09	
	3834 Sep 08 21:32	0°♐		evening set	3840 Nov 22 21:30	15°♏56'09	
conjunction	3834 Sep 24 01:22	1°♐55'00	1°43'19	conjunction	3840 Dec 09 20:13	17°♏58'04	1°43'20
minimum elong	3834 Sep 24 01:19	1°♐55'00	1°43'19	minimum elong	3840 Dec 09 20:15	17°♏58'04	1°43'20
max. Earth dist.	3834 Sep 24 01:29	1°♐55'03	10.26428 AU	max. Earth dist.	3840 Dec 09 18:10	17°♏57'27	10.80365 AU
morning rise	3834 Oct 11 17:59	4°♐08'56		morning rise	3840 Dec 26 15:32	19°♏58'58	
retrograde	3835 Jan 21 15:23	11°♐56'03		retrograde	3841 Apr 05 09:17	27°♏07'58	
opposition	3835 Mar 29 12:48	8°♐31'47	2°18'49	opposition	3841 Jun 13 10:16	23°♏49'25	1°55'56
min. Earth dist.	3835 Mar 29 12:18	8°♐31'53	8.30512 AU	min. Earth dist.	3841 Jun 13 11:12	23°♏49'14	8.84096 AU
direct	3835 Jun 06 06:45	5°♐03'11		direct	3841 Aug 23 07:41	20°♏26'47	
evening set	3835 Sep 20 10:24	13°♐03'46		evening set	3841 Dec 04 23:30	27°♏47'23	
conjunction	3835 Oct 08 02:25	15°♐16'25	1°59'08	conjunction	3841 Dec 21 20:18	29°♏47'56	1°24'31
minimum elong	3835 Oct 08 02:23	15°♐16'24	1°59'08	minimum elong	3841 Dec 21 20:20	29°♏47'57	1°24'31
max. Earth dist.	3835 Oct 08 02:19	15°♐16'23	10.34686 AU	max. Earth dist.	3841 Dec 21 18:54	29°♏47'31	10.87348 AU
morning rise	3835 Oct 25 14:28	17°♐27'51			3841 Dec 23 12:30	0°♑	
retrograde	3836 Feb 03 19:44	25°♐07'34		morning rise	3842 Jan 07 14:04	1°♑47'38	
opposition	3836 Apr 10 23:11	21°♐44'24	2°34'10	retrograde	3842 Apr 17 11:29	8°♑53'30	
min. Earth dist.	3836 Apr 10 22:34	21°♐44'31	8.39309 AU	opposition	3842 Jun 25 21:01	5°♑35'24	1°30'33
direct	3836 Jun 19 05:26	18°♐16'25		min. Earth dist.	3842 Jun 25 22:04	5°♑35'12	8.90326 AU
evening set	3836 Oct 03 06:50	26°♐11'16		direct	3842 Sep 04 20:17	2°♑13'52	
				evening set	3842 Dec 16 20:18	9°♑28'57	
conjunction	3836 Oct 20 18:44	28°♐21'28	2°08'25				
minimum elong	3836 Oct 20 18:43	28°♐21'28	2°08'26	conjunction	3843 Jan 02 15:27	11°♑28'26	1°02'23
max. Earth dist.	3836 Oct 20 18:49	28°♐21'30	10.43860 AU	minimum elong	3843 Jan 02 15:29	11°♑28'27	1°02'23
	3836 Nov 02 23:21	0°♒		max. Earth dist.	3843 Jan 02 13:49	11°♑27'57	10.92820 AU
morning rise	3836 Nov 07 02:13	0°♒30'21		morning rise	3843 Jan 19 08:17	13°♑27'17	
retrograde	3837 Feb 15 19:39	8°♒02'41		retrograde	3843 Apr 29 11:32	20°♑31'15	
opposition	3837 Apr 24 05:08	4°♒40'37	2°41'18	opposition	3843 Jul 08 05:33	17°♑13'23	1°01'45



min. Earth dist.	3843 Jul 08 07:24	17°☾13'02	8.94944 AU	morning rise	3849 Mar 28 03:27	22°☿48'06	
direct	3843 Sep 17 03:18	13°☾52'50			3849 Jun 25 16:33	0°♊	
evening set	3843 Dec 28 13:10	21°☾03'27		retrograde	3849 Jul 09 15:46	0°♊09'41	
					3849 Jul 23 18:52	30°♊	
conjunction	3844 Jan 14 06:56	23°☾02'09	0°37'53	opposition	3849 Sep 18 09:04	26°☿48'07	-1°-58'-1
minimum elong	3844 Jan 14 06:57	23°☾02'10	0°37'54	min. Earth dist.	3849 Sep 18 10:42	26°☿47'48	8.83121 AU
max. Earth dist.	3844 Jan 14 04:26	23°☾01'25	10.96584 AU	direct	3849 Nov 26 15:35	23°☿29'16	
morning rise	3844 Jan 30 23:21	25°☾00'28			3850 Feb 28 23:51	0°♊	
	3844 Mar 20 13:29	0°♊		evening set	3850 Mar 06 14:44	0°♊39'37	
retrograde	3844 May 10 09:40	2°♊03'59					
	3844 Jul 02 11:56	30°♊		conjunction	3850 Mar 23 08:38	2°♊40'28	-1°-44'-51
opposition	3844 Jul 19 12:54	28°☾46'05	0°30'42	minimum elong	3850 Mar 23 08:35	2°♊40'27	1°44'52
min. Earth dist.	3844 Jul 19 14:58	28°☾45'42	8.97783 AU	max. Earth dist.	3850 Mar 23 07:10	2°♊40'01	10.79160 AU
direct	3844 Sep 28 08:56	25°☾26'21		morning rise	3850 Apr 09 05:28	4°♊42'15	
	3844 Dec 16 00:41	0°♊		retrograde	3850 Jul 22 12:25	12°♊10'49	
evening set	3845 Jan 08 03:15	2°♊33'37		opposition	3850 Oct 01 01:06	8°♊47'59	-2°-18'-23
				min. Earth dist.	3850 Oct 01 01:47	8°♊47'52	8.75055 AU
conjunction	3845 Jan 24 20:06	4°♊31'52	0°12'00	direct	3850 Dec 08 21:35	5°♊28'37	
minimum elong	3845 Jan 24 20:07	4°♊31'52	0°12'01	evening set	3851 Mar 18 19:31	12°♊43'23	
behind sun begin	3845 Jan 24 15:16	4°♊30'27					
behind sun end	3845 Jan 25 00:59	4°♊33'18		conjunction	3851 Apr 04 15:11	14°♊45'47	-1°-59'00
max. Earth dist.	3845 Jan 24 17:44	4°♊31'11	10.98497 AU	minimum elong	3851 Apr 04 15:09	14°♊45'46	1°59'01
morning rise	3845 Feb 10 12:23	6°♊29'57		max. Earth dist.	3851 Apr 04 14:26	14°♊45'33	10.70501 AU
retrograde	3845 May 22 10:40	13°♊34'26		morning rise	3851 Apr 21 14:20	16°♊49'18	
desc. node	3845 Jul 14 19:56	11°♊29'50		retrograde	3851 Aug 04 14:00	24°♊25'23	
opposition	3845 Jul 31 19:37	10°♊16'13	0°-1'-26	opposition	3851 Oct 13 21:06	21°♊01'15	-2°-32'-58
min. Earth dist.	3845 Jul 31 21:00	10°♊15'58	8.98728 AU	min. Earth dist.	3851 Oct 13 21:07	21°♊01'15	8.65955 AU
direct	3845 Oct 10 12:07	6°♊57'08		direct	3851 Dec 21 05:19	17°♊41'08	
evening set	3846 Jan 19 16:21	14°♊02'17		evening set	3852 Mar 30 07:04	25°♊01'18	
	3846 Jan 27 21:10	15°♊					
				conjunction	3852 Apr 16 05:11	27°♊05'33	-2°-7'-59
conjunction	3846 Feb 05 08:43	16°♊00'23	0°-14'-23	minimum elong	3852 Apr 16 05:10	27°♊05'33	2°08'00
minimum elong	3846 Feb 05 08:43	16°♊00'23	0°14'24	max. Earth dist.	3852 Apr 16 04:21	27°♊05'18	10.61029 AU
behind sun begin	3846 Feb 05 05:21	15°♊59'24		morning rise	3852 May 03 07:27	29°♊11'07	
behind sun end	3846 Feb 05 12:04	16°♊01'22			3852 May 10 03:08	0°♋	
max. Earth dist.	3846 Feb 05 07:18	15°♊59'59	10.98465 AU	retrograde	3852 Aug 16 20:46	6°♋54'55	
morning rise	3846 Feb 22 01:03	17°♊58'33		opposition	3852 Oct 25 21:25	3°♋29'28	-2°-40'-45
retrograde	3846 Jun 03 12:54	25°♊05'20		min. Earth dist.	3852 Oct 25 21:26	3°♋29'28	8.56250 AU
opposition	3846 Aug 13 02:22	21°♊46'35	0°-33'-32	direct	3853 Jan 01 19:28	0°♋08'24	
min. Earth dist.	3846 Aug 13 03:20	21°♊46'24	8.97712 AU	evening set	3853 Apr 12 02:08	7°♋34'44	
direct	3846 Oct 22 11:52	18°♊27'55					
evening set	3847 Jan 31 05:55	25°♊32'18		conjunction	3853 Apr 29 03:33	9°♋41'12	-2°-11'-3
				minimum elong	3853 Apr 29 03:34	9°♋41'12	2°11'04
conjunction	3847 Feb 16 21:57	27°♊30'35	0°-40'-11	max. Earth dist.	3853 Apr 29 03:03	9°♋41'02	10.51180 AU
minimum elong	3847 Feb 16 21:56	27°♊30'34	0°40'12	morning rise	3853 May 16 09:32	11°♋49'03	
max. Earth dist.	3847 Feb 16 20:17	27°♊30'05	10.96444 AU		3853 Jun 13 00:28	15°♋	
morning rise	3847 Mar 05 14:45	29°♊29'07		retrograde	3853 Aug 30 09:58	19°♋40'21	
	3847 Mar 10 01:26	0°♋		opposition	3853 Nov 08 02:10	16°♋13'42	-2°-40'-54
retrograde	3847 Jun 15 18:40	6°♋39'34		min. Earth dist.	3853 Nov 08 02:05	16°♋13'43	8.46379 AU
opposition	3847 Aug 25 10:24	3°♋20'04	-1°-4'-26		3853 Nov 24 02:03	15°♋	
min. Earth dist.	3847 Aug 25 11:48	3°♋19'49	8.94710 AU	direct	3854 Jan 14 15:08	12°♋51'33	
direct	3847 Nov 03 12:07	0°♋01'35			3854 Mar 05 08:39	15°♋	
evening set	3848 Feb 11 21:12	7°♋06'35		evening set	3854 Apr 25 05:23	20°♋24'35	
conjunction	3848 Feb 28 13:11	9°♋05'21	-1°-4'-30	conjunction	3854 May 12 10:54	22°♋33'28	-2°-7'-41
minimum elong	3848 Feb 28 13:09	9°♋05'20	1°04'32	minimum elong	3854 May 12 10:55	22°♋33'28	2°07'42
max. Earth dist.	3848 Feb 28 10:37	9°♋04'35	10.92443 AU	max. Earth dist.	3854 May 12 11:26	22°♋33'38	10.41404 AU
morning rise	3848 Mar 16 06:58	11°♋04'38		morning rise	3854 May 29 20:57	24°♋43'47	
retrograde	3848 Jun 27 03:02	18°♋20'04			3854 Jul 17 10:50	0°♌	
opposition	3848 Sep 05 20:28	14°♋59'38	-1°-32'-59	retrograde	3854 Sep 13 04:58	2°♌41'57	
min. Earth dist.	3848 Sep 05 22:27	14°♋59'16	8.89777 AU		3854 Nov 11 18:57	30°♌	
direct	3848 Nov 14 12:15	11°♋41'04		opposition	3854 Nov 21 11:12	29°♋14'15	-2°-32'-53
evening set	3849 Feb 22 15:44	18°♋48'07		min. Earth dist.	3854 Nov 21 10:27	29°♋14'24	8.36812 AU
				direct	3855 Jan 27 16:10	25°♋50'58	
conjunction	3849 Mar 11 08:20	20°♋47'44	-1°-26'-23		3855 Apr 08 10:34	0°♌	
minimum elong	3849 Mar 11 08:17	20°♋47'43	1°26'24	evening set	3855 May 08 17:07	3°♌30'57	
max. Earth dist.	3849 Mar 11 05:49	20°♋46'58	10.86591 AU				



conjunction	3855 May 26 03:16	5°II42'23	-1°-57'-39	minimum elong	3861 Aug 19 18:40	28°Ω30'55	0°41'36
minimum elong	3855 May 26 03:19	5°II42'24	1°57'41	max. Earth dist.	3861 Aug 19 21:18	28°Ω31'46	10.11879 AU
max. Earth dist.	3855 May 26 05:08	5°II42'58	10.32188 AU		3861 Aug 31 07:50	0°♊	
morning rise	3855 Jun 12 17:39	7°II55'11		morning rise	3861 Sep 06 20:21	0°♊49'41	
retrograde	3855 Sep 27 04:46	15°II59'13		retrograde	3861 Dec 19 14:08	8°♊53'10	
opposition	3855 Dec 05 00:29	12°II30'41	-2°-16'-36	opposition	3862 Feb 24 08:29	5°♊26'09	1°09'57
min. Earth dist.	3855 Dec 04 22:44	12°II31'03	8.28039 AU	min. Earth dist.	3862 Feb 24 05:53	5°♊26'41	8.13849 AU
direct	3856 Feb 09 23:41	9°II06'13		direct	3862 May 02 22:05	1°♊57'07	
evening set	3856 May 21 13:20	16°II53'05		evening set	3862 Aug 16 11:37	10°♊05'59	
conjunction	3856 Jun 08 04:17	19°II07'02	-1°-41'-8	conjunction	3862 Sep 03 12:35	12°♊23'55	1°10'02
minimum elong	3856 Jun 08 04:21	19°II07'03	1°41'09	minimum elong	3862 Sep 03 12:33	12°♊23'54	1°10'02
max. Earth dist.	3856 Jun 08 06:57	19°II07'52	10.24015 AU	max. Earth dist.	3862 Sep 03 15:30	12°♊24'51	10.16317 AU
morning rise	3856 Jun 25 23:03	21°II22'13		morning rise	3862 Sep 21 11:10	14°♊41'07	
retrograde	3856 Oct 10 09:14	29°II30'40		retrograde	3863 Jan 02 12:06	22°♊38'50	
opposition	3856 Dec 17 17:31	26°II01'36	-1°-52'-29	opposition	3863 Mar 10 04:29	19°♊12'58	1°42'45
min. Earth dist.	3856 Dec 17 15:08	26°II02'05	8.20527 AU	min. Earth dist.	3863 Mar 10 01:56	19°♊13'29	8.19356 AU
direct	3857 Feb 22 12:15	22°II35'57		direct	3863 May 17 03:49	15°♊44'04	
	3857 May 31 19:52	0°♊		evening set	3863 Aug 31 03:26	23°♊51'00	
evening set	3857 Jun 04 17:46	0°♊29'20					
conjunction	3857 Jun 22 13:13	2°♊45'32	-1°-18'-44	conjunction	3863 Sep 18 01:19	26°♊07'06	1°34'10
minimum elong	3857 Jun 22 13:16	2°♊45'33	1°18'46	minimum elong	3863 Sep 18 01:16	26°♊07'05	1°34'10
max. Earth dist.	3857 Jun 22 15:49	2°♊46'22	10.17331 AU	max. Earth dist.	3863 Sep 18 04:02	26°♊07'58	10.22755 AU
morning rise	3857 Jul 10 11:52	5°♊02'47		morning rise	3863 Oct 05 19:52	28°♊22'12	
retrograde	3857 Oct 24 16:45	13°♊13'55			3863 Oct 19 04:08	0°♊	
opposition	3857 Dec 31 13:29	9°♊44'38	-1°-21'-35	retrograde	3864 Jan 16 02:54	6°♊13'07	
min. Earth dist.	3857 Dec 31 11:13	9°♊45'06	8.14713 AU	opposition	3864 Mar 22 21:16	2°♊48'31	2°09'14
direct	3858 Mar 08 05:48	6°♊17'52		min. Earth dist.	3864 Mar 22 19:24	2°♊48'54	8.26684 AU
evening set	3858 Jun 19 05:11	14°♊17'04			3864 May 02 15:13	30°♊♊	
				direct	3864 May 30 08:08	29°♊20'01	
conjunction	3858 Jul 07 04:24	16°♊35'05	0°-51'-34		3864 Jun 26 23:45	0°♊	
minimum elong	3858 Jul 07 04:27	16°♊35'06	0°51'36	evening set	3864 Sep 13 12:55	7°♊23'16	
max. Earth dist.	3858 Jul 07 06:47	16°♊35'51	10.12538 AU				
morning rise	3858 Jul 25 06:03	18°♊53'52		conjunction	3864 Oct 01 06:52	9°♊37'06	1°52'44
retrograde	3858 Nov 08 01:15	27°♊05'48		minimum elong	3864 Oct 01 06:50	9°♊37'05	1°52'44
opposition	3859 Jan 14 11:46	23°♊36'38	0°-45'-34	max. Earth dist.	3864 Oct 01 08:44	9°♊37'41	10.30800 AU
min. Earth dist.	3859 Jan 14 09:42	23°♊37'04	8.10964 AU	morning rise	3864 Oct 18 20:54	11°♊49'44	
direct	3859 Mar 22 05:47	20°♊08'55		retrograde	3865 Jan 28 11:22	19°♊33'17	
evening set	3859 Jul 03 21:56	28°♊12'50		opposition	3865 Apr 05 10:21	16°♊09'59	2°28'11
	3859 Jul 17 20:42	0°♊		min. Earth dist.	3865 Apr 05 09:32	16°♊10'09	8.35387 AU
conjunction	3859 Jul 21 23:51	0°♊32'01	0°-21'-12	direct	3865 Jun 13 08:55	12°♊42'07	
minimum elong	3859 Jul 21 23:52	0°♊32'01	0°21'13	evening set	3865 Sep 27 14:05	20°♊40'06	
max. Earth dist.	3859 Jul 22 02:03	0°♊32'43	10.09942 AU				
morning rise	3859 Aug 09 03:10	2°♊51'37		conjunction	3865 Oct 15 03:44	22°♊51'27	2°04'58
retrograde	3859 Nov 22 07:44	11°♊02'28		minimum elong	3865 Oct 15 03:43	22°♊51'27	2°04'59
opposition	3860 Jan 28 11:08	7°♊33'45	0°-6'-37	max. Earth dist.	3865 Oct 15 04:15	22°♊51'37	10.39973 AU
min. Earth dist.	3860 Jan 28 09:13	7°♊34'08	8.09527 AU	morning rise	3865 Nov 01 13:16	25°♊01'31	
asc. node	3860 Apr 01 00:11	4°♊05'56			3865 Dec 17 04:25	0°♊	
direct	3860 Apr 04 09:59	4°♊05'17		retrograde	3866 Feb 10 13:34	2°♊37'30	
evening set	3860 Jul 17 18:22	12°♊12'35			3866 Apr 09 07:24	30°♊♊	
conjunction	3860 Aug 04 21:32	14°♊32'08	0°10'35	opposition	3866 Apr 18 19:00	29°♊15'25	2°38'57
minimum elong	3860 Aug 04 21:32	14°♊32'08	0°10'34	min. Earth dist.	3866 Apr 18 18:45	29°♊15'28	8.44945 AU
behind sun begin	3860 Aug 04 15:54	14°♊30'20		direct	3866 Jun 27 04:48	25°♊48'22	
behind sun end	3860 Aug 05 03:10	14°♊33'56			3866 Sep 08 23:21	0°♊	
max. Earth dist.	3860 Aug 04 23:44	14°♊32'50	10.09713 AU	evening set	3866 Oct 11 06:03	3°♊39'57	
	3860 Aug 08 11:49	15°♊					
morning rise	3860 Aug 23 00:52	16°♊51'43		conjunction	3866 Oct 28 15:35	5°♊48'49	2°10'33
retrograde	3860 Dec 05 12:16	24°♊59'41		minimum elong	3866 Oct 28 15:35	5°♊48'49	2°10'34
opposition	3861 Feb 10 10:19	21°♊31'42	0°32'43	max. Earth dist.	3866 Oct 28 15:05	5°♊48'40	10.49730 AU
min. Earth dist.	3861 Feb 10 08:08	21°♊32'08	8.10505 AU	morning rise	3866 Nov 14 20:55	7°♊56'23	
direct	3861 Apr 18 15:59	18°♊02'47			3867 Feb 01 20:07	15°♊	
evening set	3861 Aug 01 15:52	26°♊11'48		retrograde	3867 Feb 23 08:19	15°♊24'58	
conjunction	3861 Aug 19 18:42	28°♊30'56	0°41'36		3867 Mar 17 02:40	15°♊♊	
				opposition	3867 May 01 22:46	12°♊04'00	2°41'30
				min. Earth dist.	3867 May 01 22:54	12°♊03'59	8.54775 AU
				direct	3867 Jul 10 20:11	8°♊37'54	
					3867 Oct 12 21:41	15°♊	



evening set	3867 Oct 24 12:29	16° $\mathbb{M}$ 22'27		minimum elong	3874 Jan 20 08:07	29° $\mathfrak{Z}$ 55'31	0°23'03
				max. Earth dist.	3874 Jan 20 05:25	29° $\mathfrak{Z}$ 54'43	10.96028 AU
conjunction	3867 Nov 10 18:21	18° $\mathbb{M}$ 28'59	2°09'37		3874 Jan 20 23:13	0° $\approx$	
minimum elong	3867 Nov 10 18:22	18° $\mathbb{M}$ 28'59	2°09'38	morning rise	3874 Feb 06 00:24	1° $\approx$ 53'52	
max. Earth dist.	3867 Nov 10 17:10	18° $\mathbb{M}$ 28'37	10.59473 AU	retrograde	3874 May 17 18:26	8° $\approx$ 58'31	
morning rise	3867 Nov 27 19:55	20° $\mathbb{M}$ 34'15		opposition	3874 Jul 26 23:39	5° $\approx$ 40'01	0°12'10
retrograde	3868 Mar 06 22:40	27° $\mathbb{M}$ 56'06		min. Earth dist.	3874 Jul 27 02:04	5° $\approx$ 39'34	8.96475 AU
opposition	3868 May 13 22:10	24° $\mathbb{M}$ 36'08	2°36'14	direct	3874 Oct 05 17:27	2° $\approx$ 20'07	
min. Earth dist.	3868 May 13 22:44	24° $\mathbb{M}$ 36'01	8.64288 AU	desc. node	3874 Dec 15 22:08	6° $\approx$ 09'35	
direct	3868 Jul 23 05:09	21° $\mathbb{M}$ 11'05		evening set	3875 Jan 15 04:34	9° $\approx$ 26'50	
evening set	3868 Nov 05 09:44	28° $\mathbb{M}$ 48'28					
	3868 Nov 15 06:51	0° $\mathfrak{A}$		conjunction	3875 Jan 31 21:09	11° $\approx$ 25'14	0°-3'-21
				minimum elong	3875 Jan 31 21:09	11° $\approx$ 25'14	0°03'22
conjunction	3868 Nov 22 12:23	0° $\mathfrak{A}$ 52'56	2°02'35	behind sun begin	3875 Jan 31 14:13	11° $\approx$ 23'11	
minimum elong	3868 Nov 22 12:24	0° $\mathfrak{A}$ 52'56	2°02'35	behind sun end	3875 Feb 01 04:06	11° $\approx$ 27'16	
max. Earth dist.	3868 Nov 22 10:56	0° $\mathfrak{A}$ 52'29	10.68662 AU	max. Earth dist.	3875 Jan 31 17:51	11° $\approx$ 24'18	10.96452 AU
morning rise	3868 Dec 09 10:47	2° $\mathfrak{A}$ 56'11		morning rise	3875 Feb 17 13:35	13° $\approx$ 23'35	
retrograde	3869 Mar 19 09:30	10° $\mathfrak{A}$ 12'15			3875 Mar 03 17:18	15° $\approx$	
opposition	3869 May 26 17:32	6° $\mathfrak{A}$ 53'08	2°23'53	retrograde	3875 May 29 18:37	20° $\approx$ 29'59	
min. Earth dist.	3869 May 26 19:06	6° $\mathfrak{A}$ 52'50	8.73041 AU	opposition	3875 Aug 08 06:49	17° $\approx$ 10'54	0°-20'-9
direct	3869 Aug 05 06:34	3° $\mathfrak{A}$ 29'12		min. Earth dist.	3875 Aug 08 09:30	17° $\approx$ 10'24	8.95972 AU
evening set	3869 Nov 17 22:45	10° $\mathfrak{A}$ 59'37			3875 Sep 09 08:28	15° $\mathfrak{R}$ $\approx$	
				direct	3875 Oct 17 19:01	13° $\approx$ 51'23	
conjunction	3869 Dec 04 22:37	13° $\mathfrak{A}$ 02'19	1°50'05		3875 Nov 24 08:49	15° $\approx$	
minimum elong	3869 Dec 04 22:39	13° $\mathfrak{A}$ 02'20	1°50'06	evening set	3876 Jan 26 18:10	20° $\approx$ 56'51	
max. Earth dist.	3869 Dec 04 20:13	13° $\mathfrak{A}$ 01'35	10.76942 AU				
morning rise	3869 Dec 21 18:43	15° $\mathfrak{A}$ 03'57		conjunction	3876 Feb 12 10:19	22° $\approx$ 55'16	0°-29'-30
retrograde	3870 Mar 31 14:24	22° $\mathfrak{A}$ 15'13		minimum elong	3876 Feb 12 10:18	22° $\approx$ 55'16	0°29'31
opposition	3870 Jun 08 09:13	18° $\mathfrak{A}$ 56'45	2°05'24	max. Earth dist.	3876 Feb 12 07:22	22° $\approx$ 54'23	10.95024 AU
min. Earth dist.	3870 Jun 08 11:50	18° $\mathfrak{A}$ 56'16	8.80743 AU	morning rise	3876 Feb 29 03:07	24° $\approx$ 53'53	
direct	3870 Aug 18 02:37	15° $\mathfrak{A}$ 33'51			3876 Apr 19 21:02	0° $\mathfrak{H}$	
evening set	3870 Nov 30 04:29	22° $\mathfrak{A}$ 57'47		retrograde	3876 Jun 09 22:27	2° $\mathfrak{H}$ 03'29	
					3876 Aug 02 01:30	30° $\mathfrak{R}$ $\approx$	
conjunction	3870 Dec 17 02:04	24° $\mathfrak{A}$ 59'01	1°32'58	opposition	3876 Aug 19 14:48	28° $\approx$ 43'38	0°-51'-46
minimum elong	3870 Dec 17 02:06	24° $\mathfrak{A}$ 59'02	1°32'58	min. Earth dist.	3876 Aug 19 16:37	28° $\approx$ 43'17	8.93641 AU
max. Earth dist.	3870 Dec 16 22:30	24° $\mathfrak{A}$ 57'57	10.84044 AU	direct	3876 Oct 28 21:06	25° $\approx$ 24'21	
morning rise	3871 Jan 02 20:36	26° $\mathfrak{A}$ 59'21			3877 Jan 15 00:19	0° $\mathfrak{H}$	
	3871 Jan 29 22:57	0° $\mathfrak{Z}$		evening set	3877 Feb 06 08:46	2° $\mathfrak{H}$ 29'50	
retrograde	3871 Apr 12 16:30	4° $\mathfrak{Z}$ 07'01					
opposition	3871 Jun 20 21:48	0° $\mathfrak{Z}$ 48'56	1°41'50	conjunction	3877 Feb 23 00:58	4° $\mathfrak{H}$ 28'38	0°-54'-36
min. Earth dist.	3871 Jun 21 00:50	0° $\mathfrak{Z}$ 48'21	8.87131 AU	minimum elong	3877 Feb 23 00:56	4° $\mathfrak{H}$ 28'38	0°54'37
	3871 Jul 01 20:56	30° $\mathfrak{R}$ $\mathfrak{A}$		max. Earth dist.	3877 Feb 22 23:17	4° $\mathfrak{H}$ 28'08	10.91785 AU
direct	3871 Aug 30 19:56	27° $\mathfrak{A}$ 26'57		morning rise	3877 Mar 11 18:23	6° $\mathfrak{H}$ 27'51	
	3871 Oct 27 05:43	0° $\mathfrak{Z}$		retrograde	3877 Jun 22 07:03	13° $\mathfrak{H}$ 41'55	
evening set	3871 Dec 12 04:08	4° $\mathfrak{Z}$ 45'05		opposition	3877 Sep 01 00:16	10° $\mathfrak{H}$ 21'09	-1°-21'-30
				min. Earth dist.	3877 Sep 01 01:04	10° $\mathfrak{H}$ 21'00	8.89552 AU
conjunction	3871 Dec 28 23:57	6° $\mathfrak{Z}$ 45'09	1°12'08	direct	3877 Nov 09 21:24	7° $\mathfrak{H}$ 01'57	
minimum elong	3871 Dec 28 23:59	6° $\mathfrak{Z}$ 45'10	1°12'07	evening set	3878 Feb 18 02:13	14° $\mathfrak{H}$ 08'49	
max. Earth dist.	3871 Dec 28 20:08	6° $\mathfrak{Z}$ 44'01	10.89716 AU				
morning rise	3872 Jan 14 17:21	8° $\mathfrak{Z}$ 44'30		conjunction	3878 Mar 06 18:45	16° $\mathfrak{H}$ 08'19	-1°-17'-39
retrograde	3872 Apr 23 17:31	15° $\mathfrak{Z}$ 49'49		minimum elong	3878 Mar 06 18:43	16° $\mathfrak{H}$ 08'18	1°17'40
opposition	3872 Jul 02 07:52	12° $\mathfrak{Z}$ 31'49	1°14'20	max. Earth dist.	3878 Mar 06 17:42	16° $\mathfrak{H}$ 07'59	10.86841 AU
min. Earth dist.	3872 Jul 02 10:19	12° $\mathfrak{Z}$ 31'22	8.91980 AU	morning rise	3878 Mar 23 13:14	18° $\mathfrak{H}$ 08'26	
direct	3872 Sep 11 07:05	9° $\mathfrak{Z}$ 10'43		retrograde	3878 Jul 04 18:58	25° $\mathfrak{H}$ 28'04	
evening set	3872 Dec 22 23:02	16° $\mathfrak{Z}$ 23'53		opposition	3878 Sep 13 12:00	22° $\mathfrak{H}$ 06'19	-1°-48'-11
				min. Earth dist.	3878 Sep 13 12:23	22° $\mathfrak{H}$ 06'14	8.83847 AU
conjunction	3873 Jan 08 17:35	18° $\mathfrak{Z}$ 23'06	0°48'29	direct	3878 Nov 21 22:50	18° $\mathfrak{H}$ 46'59	
minimum elong	3873 Jan 08 17:36	18° $\mathfrak{Z}$ 23'07	0°48'30	evening set	3879 Mar 01 23:38	25° $\mathfrak{H}$ 56'34	
max. Earth dist.	3873 Jan 08 14:42	18° $\mathfrak{Z}$ 22'15	10.93758 AU				
morning rise	3873 Jan 25 10:11	20° $\mathfrak{Z}$ 21'48		conjunction	3879 Mar 18 16:55	27° $\mathfrak{H}$ 57'04	-1°-37'-41
retrograde	3873 May 05 17:33	27° $\mathfrak{Z}$ 26'06		minimum elong	3879 Mar 18 16:52	27° $\mathfrak{H}$ 57'04	1°37'42
opposition	3873 Jul 14 16:15	24° $\mathfrak{Z}$ 07'57	0°44'03	max. Earth dist.	3879 Mar 18 15:32	27° $\mathfrak{H}$ 56'39	10.80382 AU
min. Earth dist.	3873 Jul 14 18:22	24° $\mathfrak{Z}$ 07'33	8.95130 AU	morning rise	3879 Apr 04 13:03	29° $\mathfrak{H}$ 58'26	
direct	3873 Sep 23 13:49	20° $\mathfrak{Z}$ 47'32			3879 Apr 04 18:19	0° $\mathfrak{Y}$	
evening set	3874 Jan 03 14:36	27° $\mathfrak{Z}$ 56'51		retrograde	3879 Jul 17 12:36	7° $\mathfrak{Y}$ 24'37	
				opposition	3879 Sep 26 03:04	4° $\mathfrak{Y}$ 01'47	-2°-10'-39
conjunction	3874 Jan 20 08:06	29° $\mathfrak{Z}$ 55'31	0°23'02	min. Earth dist.	3879 Sep 26 03:34	4° $\mathfrak{Y}$ 01'41	8.76751 AU



direct	3879 Dec 04 03:03	0°Υ42'10		conjunction	3886 Jun 16 23:23	27°Π22'46	-1°-28'-27
evening set	3880 Mar 13 02:04	7°Υ55'35		minimum elong	3886 Jun 16 23:27	27°Π22'47	1°28'28
				max. Earth dist.	3886 Jun 17 02:20	27°Π23'43	10.21565 AU
conjunction	3880 Mar 29 20:49	9°Υ57'27	-1°-53'-45	morning rise	3886 Jul 04 20:28	29°Π39'02	
minimum elong	3880 Mar 29 20:46	9°Υ57'26	1°53'45		3886 Jul 07 15:46	0°Ϸ	
max. Earth dist.	3880 Mar 29 20:01	9°Υ57'12	10.72672 AU	retrograde	3886 Oct 19 04:01	7°Ϸ48'42	
morning rise	3880 Apr 15 19:07	12°Υ00'23		opposition	3886 Dec 26 05:53	4°Ϸ20'08	-1°-34'-47
retrograde	3880 Jul 29 10:48	19°Υ33'49		min. Earth dist.	3886 Dec 26 03:36	4°Ϸ20'36	8.18702 AU
opposition	3880 Oct 07 21:50	16°Υ09'52	-2°-27'-45	direct	3887 Mar 02 23:05	0°Ϸ54'30	
min. Earth dist.	3880 Oct 07 21:52	16°Υ09'51	8.68553 AU	evening set	3887 Jun 13 14:19	8°Ϸ50'43	
direct	3880 Dec 15 10:38	12°Υ49'45					
evening set	3881 Mar 25 10:56	20°Υ08'06		conjunction	3887 Jul 01 12:01	11°Ϸ07'48	-1°-3'-6
				minimum elong	3887 Jul 01 12:03	11°Ϸ07'49	1°03'08
conjunction	3881 Apr 11 08:00	22°Υ11'40	-2°-4'-56	max. Earth dist.	3887 Jul 01 15:11	11°Ϸ08'49	10.16154 AU
minimum elong	3881 Apr 11 07:59	22°Υ11'40	2°04'57	morning rise	3887 Jul 19 12:24	13°Ϸ25'47	
max. Earth dist.	3881 Apr 11 08:35	22°Υ11'51	10.64028 AU	retrograde	3887 Nov 02 11:58	21°Ϸ36'58	
morning rise	3881 Apr 28 08:57	24°Υ16'28		opposition	3888 Jan 09 02:59	18°Ϸ08'23	-1°00'-42
	3881 Jun 23 07:24	0°Ϸ		min. Earth dist.	3888 Jan 09 00:30	18°Ϸ08'53	8.14131 AU
retrograde	3881 Aug 11 15:39	1°Ϸ57'29		direct	3888 Mar 15 20:17	14°Ϸ41'43	
	3881 Oct 01 07:47	30°ϣΥ		evening set	3888 Jun 27 04:51	22°Ϸ43'07	
opposition	3881 Oct 20 20:29	28°Υ32'25	-2°-38'-24				
min. Earth dist.	3881 Oct 20 19:30	28°Υ32'36	8.59605 AU	conjunction	3888 Jul 15 05:50	25°Ϸ01'41	0°-33'-52
direct	3881 Dec 27 23:48	25°Υ11'41		minimum elong	3888 Jul 15 05:51	25°Ϸ01'41	0°33'54
	3882 Mar 15 18:21	0°Ϸ		max. Earth dist.	3888 Jul 15 08:51	25°Ϸ02'39	10.12562 AU
evening set	3882 Apr 07 03:06	2°Ϸ35'47		morning rise	3888 Aug 02 08:23	27°Ϸ20'47	
					3888 Aug 24 05:19	0°ϣ	
conjunction	3882 Apr 24 03:12	4°Ϸ41'23	-2°-10'-29	retrograde	3888 Nov 15 19:36	5°ϣ31'44	
minimum elong	3882 Apr 24 03:12	4°Ϸ41'23	2°10'30	opposition	3889 Jan 22 01:41	2°ϣ03'24	0°-22'-45
max. Earth dist.	3882 Apr 24 05:03	4°Ϸ41'58	10.54839 AU	min. Earth dist.	3889 Jan 21 23:14	2°ϣ03'55	8.11554 AU
morning rise	3882 May 11 07:24	6°Ϸ48'19			3889 Feb 17 23:09	30°ϣϷ	
retrograde	3882 Aug 25 04:08	14°Ϸ36'53		direct	3889 Mar 29 21:58	28°Ϸ35'52	
opposition	3882 Nov 02 23:40	11°Ϸ10'46	-2°-41'-43		3889 May 08 10:08	0°ϣ	
min. Earth dist.	3882 Nov 02 21:37	11°Ϸ11'10	8.50312 AU	evening set	3889 Jul 11 23:52	6°ϣ41'18	
direct	3883 Jan 09 16:10	7°Ϸ49'17					
	3883 Apr 17 10:32	15°Ϸ		conjunction	3889 Jul 30 02:40	9°ϣ00'36	0°-2'-33
evening set	3883 Apr 20 03:12	15°Ϸ19'43		minimum elong	3889 Jul 30 02:39	9°ϣ00'36	0°02'35
				behind sun begin	3889 Jul 29 19:18	8°ϣ58'15	
conjunction	3883 May 07 06:56	17°Ϸ27'36	-2°-9'-47	behind sun end	3889 Jul 30 09:59	9°ϣ02'56	
minimum elong	3883 May 07 06:57	17°Ϸ27'36	2°09'48	max. Earth dist.	3889 Jul 30 05:20	9°ϣ01'25	10.11104 AU
max. Earth dist.	3883 May 07 09:11	17°Ϸ28'18	10.45544 AU	morning rise	3889 Aug 17 05:52	11°ϣ20'03	
morning rise	3883 May 24 15:04	19°Ϸ36'53		asc. node	3889 Aug 29 01:14	12°ϣ47'53	
retrograde	3883 Sep 07 22:33	27°Ϸ32'30			3889 Sep 17 03:31	15°ϣ	
opposition	3883 Nov 16 07:27	24°Ϸ05'30	-2°-37'-2	retrograde	3889 Nov 30 01:46	19°ϣ28'56	
min. Earth dist.	3883 Nov 16 05:04	24°Ϸ05'59	8.41131 AU	opposition	3890 Feb 05 00:51	16°ϣ01'07	0°16'40
direct	3884 Jan 22 13:40	20°Ϸ43'06		min. Earth dist.	3890 Feb 04 22:47	16°ϣ01'33	8.11246 AU
evening set	3884 May 02 11:50	28°Ϸ20'15			3890 Feb 17 15:09	15°ϣϣ	
	3884 May 15 18:53	0°Π		direct	3890 Apr 13 02:12	12°ϣ32'53	
					3890 Jun 05 07:45	15°ϣ	
conjunction	3884 May 19 19:49	0°Π30'34	-2°-2'-28	evening set	3890 Jul 26 20:56	20°ϣ40'47	
minimum elong	3884 May 19 19:52	0°Π30'35	2°02'29				
max. Earth dist.	3884 May 19 22:10	0°Π31'18	10.36612 AU	conjunction	3890 Aug 13 23:56	23°ϣ00'01	0°29'03
morning rise	3884 Jun 06 08:23	2°Π42'18		minimum elong	3890 Aug 13 23:55	23°ϣ00'00	0°29'02
retrograde	3884 Sep 20 20:16	10°Π44'01		max. Earth dist.	3890 Aug 14 01:55	23°ϣ00'39	10.11971 AU
opposition	3884 Nov 28 19:21	7°Π16'18	-2°-24'-4	morning rise	3890 Sep 01 02:17	25°ϣ19'01	
min. Earth dist.	3884 Nov 28 17:07	7°Π16'45	8.32531 AU		3890 Oct 11 21:43	0°ϣϣ	
direct	3885 Feb 03 19:27	3°Π52'51		retrograde	3890 Dec 14 05:02	3°ϣ24'06	
evening set	3885 May 16 04:55	11°Π36'45		opposition	3891 Feb 18 23:23	29°ϣ57'00	0°55'01
					3891 Feb 18 08:45	30°ϣϣ	
conjunction	3885 Jun 02 17:38	13°Π49'32	-1°-48'-32	min. Earth dist.	3891 Feb 18 22:00	29°ϣ57'17	8.13296 AU
minimum elong	3885 Jun 02 17:41	13°Π49'33	1°48'34	direct	3891 Apr 27 08:19	26°ϣ28'17	
max. Earth dist.	3885 Jun 02 20:05	13°Π50'19	10.28490 AU		3891 Jul 01 11:41	0°ϣϣ	
morning rise	3885 Jun 20 10:40	16°Π03'39		evening set	3891 Aug 10 17:25	4°ϣ36'53	
retrograde	3885 Oct 04 22:23	24°Π10'08					
opposition	3885 Dec 12 11:05	20°Π41'54	-2°-3'-3	conjunction	3891 Aug 28 19:08	6°ϣ55'14	0°58'44
min. Earth dist.	3885 Dec 12 09:01	20°Π42'19	8.24936 AU	minimum elong	3891 Aug 28 19:05	6°ϣ55'13	0°58'44
direct	3886 Feb 17 06:46	17°Π17'21		max. Earth dist.	3891 Aug 28 20:16	6°ϣ55'36	10.15147 AU
evening set	3886 May 30 05:58	25°Π07'40		morning rise	3891 Sep 15 19:09	9°ϣ13'02	



retrograde	3891 Dec 28 03:33	17° $\mathring{M}$ 12'49		opposition	3898 May 21 16:23	1° $\mathring{Z}$ 56'08	2°30'03
opposition	3892 Mar 03 20:04	13° $\mathring{M}$ 46'36	1°29'51	min. Earth dist.	3898 May 21 17:32	1° $\mathring{Z}$ 55'55	8.69027 AU
min. Earth dist.	3892 Mar 03 19:03	13° $\mathring{M}$ 46'49	8.17582 AU		3898 Jun 17 12:04	30° $\mathring{R}$ $\mathring{M}$	
direct	3892 May 10 15:21	10° $\mathring{M}$ 17'41		direct	3898 Jul 31 03:52	28° $\mathring{M}$ 31'13	
evening set	3892 Aug 24 10:49	18° $\mathring{M}$ 25'08			3898 Sep 12 01:16	0° $\mathring{Z}$	
				evening set	3898 Nov 13 00:15	6° $\mathring{Z}$ 04'09	
conjunction	3892 Sep 11 09:55	20° $\mathring{M}$ 41'55	1°24'48				
minimum elong	3892 Sep 11 09:52	20° $\mathring{M}$ 41'54	1°24'48	conjunction	3898 Nov 30 01:14	8° $\mathring{Z}$ 07'31	1°56'06
max. Earth dist.	3892 Sep 11 10:34	20° $\mathring{M}$ 42'07	10.20425 AU	minimum elong	3898 Nov 30 01:16	8° $\mathring{Z}$ 07'31	1°56'06
morning rise	3892 Sep 29 06:21	22° $\mathring{M}$ 57'51		max. Earth dist.	3898 Nov 29 23:16	8° $\mathring{Z}$ 06'55	10.73319 AU
	3892 Dec 10 05:31	0° $\mathring{Z}$		morning rise	3898 Dec 16 22:27	10° $\mathring{Z}$ 09'45	
retrograde	3893 Jan 09 19:08	0° $\mathring{Z}$ 51'14		retrograde	3899 Mar 26 16:17	17° $\mathring{Z}$ 22'24	
	3893 Feb 09 16:08	30° $\mathring{R}$ $\mathring{M}$		opposition	3899 Jun 03 08:34	14° $\mathring{Z}$ 03'16	2°14'05
opposition	3893 Mar 17 13:47	27° $\mathring{M}$ 26'03	1°59'07	min. Earth dist.	3899 Jun 03 09:26	14° $\mathring{Z}$ 03'06	8.77583 AU
min. Earth dist.	3893 Mar 17 12:49	27° $\mathring{M}$ 26'15	8.23825 AU	direct	3899 Aug 13 02:32	10° $\mathring{Z}$ 39'32	
direct	3893 May 24 21:32	23° $\mathring{M}$ 57'13		evening set	3899 Nov 25 08:12	18° $\mathring{Z}$ 05'37	
	3893 Aug 22 03:27	0° $\mathring{Z}$					
evening set	3893 Sep 07 22:33	2° $\mathring{Z}$ 01'42		conjunction	3899 Dec 12 06:51	20° $\mathring{Z}$ 07'20	1°40'54
				minimum elong	3899 Dec 12 06:53	20° $\mathring{Z}$ 07'21	1°40'53
conjunction	3893 Sep 25 18:09	4° $\mathring{Z}$ 16'25	1°45'47	max. Earth dist.	3899 Dec 12 05:22	20° $\mathring{Z}$ 06'54	10.81386 AU
minimum elong	3893 Sep 25 18:06	4° $\mathring{Z}$ 16'24	1°45'47	morning rise	3899 Dec 29 01:57	22° $\mathring{Z}$ 08'05	
max. Earth dist.	3893 Sep 25 18:40	4° $\mathring{Z}$ 16'34	10.27476 AU	retrograde	3900 Apr 07 20:44	29° $\mathring{Z}$ 16'28	
morning rise	3893 Oct 13 10:13	6° $\mathring{Z}$ 30'02		opposition	3900 Jun 15 21:36	25° $\mathring{Z}$ 57'58	1°52'35
retrograde	3894 Jan 23 05:38	14° $\mathring{Z}$ 16'19		min. Earth dist.	3900 Jun 15 22:38	25° $\mathring{Z}$ 57'46	8.85020 AU
opposition	3894 Mar 31 03:55	10° $\mathring{Z}$ 52'12	2°21'18	direct	3900 Aug 25 19:37	22° $\mathring{Z}$ 35'25	
min. Earth dist.	3894 Mar 31 02:45	10° $\mathring{Z}$ 52'26	8.31636 AU	evening set	3900 Dec 07 09:29	29° $\mathring{Z}$ 55'13	
direct	3894 Jun 07 23:13	7° $\mathring{Z}$ 23'45			3900 Dec 08 01:47	0° $\mathring{Z}$	
evening set	3894 Sep 22 02:33	15° $\mathring{Z}$ 23'36					
				conjunction	3900 Dec 24 06:07	1° $\mathring{Z}$ 55'37	1°21'35
conjunction	3894 Oct 09 18:11	17° $\mathring{Z}$ 35'58	2°00'43	minimum elong	3900 Dec 24 06:09	1° $\mathring{Z}$ 55'38	1°21'34
minimum elong	3894 Oct 09 18:09	17° $\mathring{Z}$ 35'58	2°00'43	max. Earth dist.	3900 Dec 24 04:34	1° $\mathring{Z}$ 55'09	10.88177 AU
max. Earth dist.	3894 Oct 09 18:55	17° $\mathring{Z}$ 36'12	10.35875 AU	morning rise	3901 Jan 09 23:47	3° $\mathring{Z}$ 55'12	
morning rise	3894 Oct 27 05:38	19° $\mathring{Z}$ 47'05		retrograde	3901 Apr 19 21:22	11° $\mathring{Z}$ 00'35	
retrograde	3895 Feb 05 10:41	27° $\mathring{Z}$ 25'55		opposition	3901 Jun 28 07:58	7° $\mathring{Z}$ 42'31	1°26'41
opposition	3895 Apr 13 13:47	24° $\mathring{Z}$ 02'54	2°35'32	min. Earth dist.	3901 Jun 28 09:44	7° $\mathring{Z}$ 42'11	8.91048 AU
min. Earth dist.	3895 Apr 13 13:02	24° $\mathring{Z}$ 03'03	8.40547 AU	direct	3901 Sep 07 06:07	4° $\mathring{Z}$ 21'03	
direct	3895 Jun 21 19:57	20° $\mathring{Z}$ 35'05		evening set	3901 Dec 19 05:37	11° $\mathring{Z}$ 35'28	
evening set	3895 Oct 05 21:59	28° $\mathring{Z}$ 29'04					
	3895 Oct 18 04:26	0° $\mathring{M}$		conjunction	3902 Jan 05 00:34	13° $\mathring{Z}$ 34'50	0°59'05
				minimum elong	3902 Jan 05 00:36	13° $\mathring{Z}$ 34'51	0°59'05
conjunction	3895 Oct 23 09:28	0° $\mathring{M}$ 38'59	2°09'05	max. Earth dist.	3902 Jan 04 22:02	13° $\mathring{Z}$ 34'05	10.93434 AU
minimum elong	3895 Oct 23 09:27	0° $\mathring{M}$ 38'59	2°09'06	morning rise	3902 Jan 21 17:28	15° $\mathring{Z}$ 33'36	
max. Earth dist.	3895 Oct 23 09:51	0° $\mathring{M}$ 39'06	10.45133 AU	retrograde	3902 May 01 19:39	22° $\mathring{Z}$ 37'19	
morning rise	3895 Nov 09 16:27	2° $\mathring{M}$ 47'34		opposition	3902 Jul 10 16:05	19° $\mathring{Z}$ 19'26	0°57'32
retrograde	3896 Feb 18 08:47	10° $\mathring{M}$ 18'57		min. Earth dist.	3902 Jul 10 18:20	19° $\mathring{Z}$ 19'01	8.95442 AU
opposition	3896 Apr 25 19:05	6° $\mathring{M}$ 57'03	2°41'31	direct	3902 Sep 19 14:21	15° $\mathring{Z}$ 58'55	
min. Earth dist.	3896 Apr 25 19:18	6° $\mathring{M}$ 57'01	8.50065 AU	evening set	3902 Dec 30 21:53	23° $\mathring{Z}$ 09'03	
direct	3896 Jul 04 11:55	3° $\mathring{M}$ 30'02					
evening set	3896 Oct 18 08:01	11° $\mathring{M}$ 17'20		conjunction	3903 Jan 16 15:38	25° $\mathring{Z}$ 07'41	0°34'21
				minimum elong	3903 Jan 16 15:39	25° $\mathring{Z}$ 07'41	0°34'22
conjunction	3896 Nov 04 15:29	13° $\mathring{M}$ 24'50	2°10'52	max. Earth dist.	3903 Jan 16 12:56	25° $\mathring{Z}$ 06'53	10.96960 AU
minimum elong	3896 Nov 04 15:29	13° $\mathring{M}$ 24'50	2°10'52	morning rise	3903 Feb 02 08:06	27° $\mathring{Z}$ 05'57	
max. Earth dist.	3896 Nov 04 14:51	13° $\mathring{M}$ 24'39	10.54768 AU		3903 Feb 28 17:34	0° $\mathring{\approx}$	
	3896 Nov 17 12:28	15° $\mathring{M}$		retrograde	3903 May 13 19:58	4° $\mathring{\approx}$ 09'24	
morning rise	3896 Nov 21 18:32	15° $\mathring{M}$ 31'03		opposition	3903 Jul 22 23:02	0° $\mathring{\approx}$ 51'27	0°26'17
retrograde	3897 Mar 01 23:55	22° $\mathring{M}$ 55'24		min. Earth dist.	3903 Jul 23 00:47	0° $\mathring{\approx}$ 51'07	8.98029 AU
opposition	3897 May 08 19:58	19° $\mathring{M}$ 34'33	2°39'30		3903 Aug 03 15:48	30° $\mathring{R}$ $\mathring{Z}$	
min. Earth dist.	3897 May 08 20:59	19° $\mathring{M}$ 34'21	8.59712 AU	direct	3903 Oct 01 19:45	27° $\mathring{Z}$ 31'46	
direct	3897 Jul 17 23:11	16° $\mathring{M}$ 08'31			3903 Nov 27 04:17	0° $\mathring{\approx}$	
evening set	3897 Oct 31 08:30	23° $\mathring{M}$ 48'38		evening set	3904 Jan 11 11:42	4° $\mathring{\approx}$ 38'41	
conjunction	3897 Nov 17 12:23	25° $\mathring{M}$ 53'57	2°06'21	conjunction	3904 Jan 28 04:39	6° $\mathring{\approx}$ 36'56	0°08'23
minimum elong	3897 Nov 17 12:25	25° $\mathring{M}$ 53'57	2°06'21	minimum elong	3904 Jan 28 04:38	6° $\mathring{\approx}$ 36'55	0°08'24
max. Earth dist.	3897 Nov 17 10:43	25° $\mathring{M}$ 53'26	10.64311 AU	behind sun begin	3904 Jan 27 22:29	6° $\mathring{\approx}$ 35'07	
morning rise	3897 Dec 04 12:14	27° $\mathring{M}$ 58'01		behind sun end	3904 Jan 28 10:48	6° $\mathring{\approx}$ 38'44	
	3897 Dec 22 00:18	0° $\mathring{Z}$		max. Earth dist.	3904 Jan 28 02:46	6° $\mathring{\approx}$ 36'23	10.98611 AU
retrograde	3898 Mar 14 10:23	5° $\mathring{Z}$ 16'04		morning rise	3904 Feb 13 20:50	8° $\mathring{\approx}$ 34'59	



	3904 Apr 26 10:34	15°♊		morning rise	3910 Apr 24 01:30	18°♑59'13	
retrograde	3904 May 24 20:10	15°♊39'35		retrograde	3910 Aug 07 02:10	26°♑36'10	
desc. node	3904 May 26 08:35	15°♊39'28		opposition	3910 Oct 16 09:02	23°♑11'57	-2°-34'-19
	3904 Jun 22 17:14	15°♊		min. Earth dist.	3910 Oct 16 09:41	23°♑11'49	8.64919 AU
opposition	3904 Aug 03 05:37	12°♊21'19	0°-5'-53	direct	3910 Dec 23 16:25	19°♑51'46	
min. Earth dist.	3904 Aug 03 06:42	12°♊21'06	8.98713 AU	evening set	3911 Apr 02 18:38	27°♑12'41	
direct	3904 Oct 12 20:56	9°♊02'16					
	3905 Jan 12 05:31	15°♊		conjunction	3911 Apr 19 17:00	29°♑17'11	-2°-8'-39
evening set	3905 Jan 22 00:47	16°♊07'17		minimum elong	3911 Apr 19 17:00	29°♑17'11	2°08'40
				max. Earth dist.	3911 Apr 19 15:34	29°♑16'44	10.59940 AU
conjunction	3905 Feb 07 17:07	18°♊05'23	0°-17'-58		3911 Apr 25 11:55	0°♈	
minimum elong	3905 Feb 07 17:06	18°♊05'23	0°17'59	morning rise	3911 May 06 19:40	1°♈22'59	
max. Earth dist.	3905 Feb 07 15:36	18°♊04'57	10.98326 AU	retrograde	3911 Aug 20 10:14	9°♈07'41	
morning rise	3905 Feb 24 09:27	20°♊03'34		opposition	3911 Oct 29 10:03	5°♈42'10	-2°-41'-6
retrograde	3905 Jun 05 23:14	27°♊10'40		min. Earth dist.	3911 Oct 29 10:36	5°♈42'04	8.55116 AU
opposition	3905 Aug 15 12:34	23°♊51'51	0°-37'-51	direct	3912 Jan 05 07:14	2°♈21'02	
min. Earth dist.	3905 Aug 15 13:55	23°♊51'36	8.97463 AU	evening set	3912 Apr 14 14:33	9°♈48'11	
direct	3905 Oct 24 21:27	20°♊33'12					
evening set	3906 Feb 02 14:27	27°♊37'37		conjunction	3912 May 01 16:26	11°♈54'55	-2°-10'-52
				minimum elong	3912 May 01 16:27	11°♈54'56	2°10'53
conjunction	3906 Feb 19 06:24	29°♊35'56	0°-43'-36	max. Earth dist.	3912 May 01 16:17	11°♈54'52	10.50020 AU
minimum elong	3906 Feb 19 06:22	29°♊35'55	0°43'38	morning rise	3912 May 18 22:47	14°♈03'04	
max. Earth dist.	3906 Feb 19 04:02	29°♊35'13	10.96095 AU		3912 May 26 19:47	15°♈	
	3906 Feb 22 15:13	0°♏		retrograde	3912 Sep 02 00:14	21°♈55'17	
morning rise	3906 Mar 07 23:24	1°♏34'33		opposition	3912 Nov 10 15:28	18°♈28'33	-2°-40'-10
retrograde	3906 Jun 18 04:33	8°♏45'26		min. Earth dist.	3912 Nov 10 15:13	18°♈28'36	8.45206 AU
opposition	3906 Aug 27 20:46	5°♏25'52	-1°-8'-28	direct	3913 Jan 17 03:33	15°♏06'20	
min. Earth dist.	3906 Aug 27 22:41	5°♏25'31	8.94277 AU	evening set	3913 Apr 27 18:55	22°♏40'15	
direct	3906 Nov 05 20:48	2°♏07'22					
evening set	3907 Feb 14 06:02	9°♏12'33		conjunction	3913 May 15 01:00	24°♏49'26	-2°-6'-36
				minimum elong	3913 May 15 01:02	24°♏49'27	2°06'38
conjunction	3907 Mar 02 22:04	11°♏11'22	-1°-7'-37	max. Earth dist.	3913 May 15 02:11	24°♏49'49	10.40236 AU
minimum elong	3907 Mar 02 22:02	11°♏11'22	1°07'39	morning rise	3913 Jun 01 11:26	27°♏00'03	
max. Earth dist.	3907 Mar 02 19:28	11°♏10'36	10.91930 AU		3913 Jun 27 01:58	0°♐	
morning rise	3907 Mar 19 15:59	13°♏10'45		retrograde	3913 Sep 15 19:43	4°♐59'04	
retrograde	3907 Jun 30 12:28	20°♏26'45		opposition	3913 Nov 24 01:06	1°♐31'18	-2°-31'-2
opposition	3907 Sep 09 06:55	17°♏06'12	-1°-36'-34	min. Earth dist.	3913 Nov 23 23:49	1°♐31'33	8.35664 AU
min. Earth dist.	3907 Sep 09 08:48	17°♏05'50	8.89195 AU		3913 Dec 13 21:06	30°♐	
direct	3907 Nov 17 22:46	13°♏47'36		direct	3914 Jan 30 05:50	28°♏07'55	
evening set	3908 Feb 26 00:58	20°♏54'57		evening set	3914 Mar 17 05:56	0°♐	
					3914 May 11 07:50	5°♐48'49	
conjunction	3908 Mar 13 17:43	22°♏54'41	-1°-29'-4				
minimum elong	3908 Mar 13 17:41	22°♏54'40	1°29'05	conjunction	3914 May 28 18:30	8°♐00'34	-1°-55'-42
max. Earth dist.	3908 Mar 13 15:55	22°♏54'08	10.85928 AU	minimum elong	3914 May 28 18:33	8°♐00'35	1°55'43
morning rise	3908 Mar 30 12:52	24°♏55'09		max. Earth dist.	3914 May 28 20:32	8°♐01'13	10.31081 AU
	3908 May 19 01:50	0°♑		morning rise	3914 Jun 15 09:20	10°♐13'41	
retrograde	3908 Jul 12 04:01	2°♑17'25		retrograde	3914 Sep 29 21:24	18°♐18'25	
	3908 Sep 06 08:22	30°♐		opposition	3914 Dec 07 15:04	14°♐49'51	-2°-13'-39
opposition	3908 Sep 20 19:57	28°♐55'43	-2°-1'00	min. Earth dist.	3914 Dec 07 13:02	14°♐50'15	8.26984 AU
min. Earth dist.	3908 Sep 20 20:58	28°♐55'32	8.82384 AU	direct	3915 Feb 12 12:47	11°♐25'17	
direct	3908 Nov 29 02:04	25°♐36'51		evening set	3915 May 25 05:05	19°♐13'01	
	3909 Feb 12 04:56	0°♑					
evening set	3909 Mar 09 00:34	2°♑47'37		conjunction	3915 Jun 11 20:28	21°♐27'15	-1°-38'-20
				minimum elong	3915 Jun 11 20:31	21°♐27'16	1°38'22
conjunction	3909 Mar 25 18:35	4°♑48'36	-1°-46'-59	max. Earth dist.	3915 Jun 11 22:42	21°♐27'58	10.23041 AU
minimum elong	3909 Mar 25 18:33	4°♑48'35	1°46'59	morning rise	3915 Jun 29 15:43	23°♐42'44	
max. Earth dist.	3909 Mar 25 17:13	4°♑48'11	10.78336 AU		3915 Aug 28 06:55	0°♑	
morning rise	3909 Apr 11 15:34	6°♑50'33		retrograde	3915 Oct 14 02:46	1°♑51'44	
retrograde	3909 Jul 25 00:56	14°♑19'54			3915 Nov 30 12:53	30°♐	
opposition	3909 Oct 03 12:30	10°♑56'58	-2°-20'-37	opposition	3915 Dec 21 08:45	28°♐22'38	-1°-48'-34
min. Earth dist.	3909 Oct 03 13:07	10°♑56'51	8.74157 AU	min. Earth dist.	3915 Dec 21 06:38	28°♐23'04	8.19640 AU
direct	3909 Dec 11 06:19	7°♑37'34		direct	3916 Feb 26 02:11	24°♐56'52	
evening set	3910 Mar 21 06:13	14°♑52'56		evening set	3916 May 14 17:02	0°♑	
					3916 Jun 07 10:26	2°♑51'04	
conjunction	3910 Apr 07 02:01	16°♑55'30	-2°00'-27				
minimum elong	3910 Apr 07 01:59	16°♑55'30	2°00'28	conjunction	3916 Jun 25 06:15	5°♑07'31	-1°-15'-14
max. Earth dist.	3910 Apr 07 00:25	16°♑55'01	10.69530 AU	minimum elong	3916 Jun 25 06:18	5°♑07'32	1°15'16



max. Earth dist.	3916 Jun 25 08:17	5°☾08'10	10.16561 AU		3922 Oct 02 18:56	0°♄	
morning rise	3916 Jul 13 05:25	7°☾25'01		morning rise	3922 Oct 08 11:47	0°♄42'57	
retrograde	3916 Oct 27 09:48	15°☾36'27		retrograde	3923 Jan 18 17:03	8°♄33'05	
opposition	3917 Jan 03 05:11	12°☾07'10	-1°-16'-53	opposition	3923 Mar 26 12:03	5°♄08'35	2°12'11
min. Earth dist.	3917 Jan 03 03:22	12°☾07'33	8.14057 AU	min. Earth dist.	3923 Mar 26 10:38	5°♄08'52	8.27563 AU
direct	3917 Mar 10 21:59	8°☾40'17		direct	3923 Jun 02 23:48	1°♄40'06	
evening set	3917 Jun 21 22:39	16°☾40'11		evening set	3923 Sep 17 04:51	9°♄42'46	
conjunction	3917 Jul 09 22:12	18°☾58'22	0°-47'-33	conjunction	3923 Oct 04 22:16	11°♄56'19	1°54'42
minimum elong	3917 Jul 09 22:15	18°☾58'23	0°47'35	minimum elong	3923 Oct 04 22:13	11°♄56'18	1°54'43
max. Earth dist.	3917 Jul 10 00:21	18°☾59'04	10.12018 AU	max. Earth dist.	3923 Oct 04 23:29	11°♄56'42	10.31756 AU
morning rise	3917 Jul 28 00:11	21°☾17'19		morning rise	3923 Oct 22 11:54	14°♄08'41	
retrograde	3917 Nov 10 16:49	29°☾29'19		retrograde	3924 Feb 01 00:50	21°♄51'23	
opposition	3918 Jan 17 03:42	26°☾00'11	0°-40'-21	opposition	3924 Apr 08 00:30	18°♄28'11	2°30'02
min. Earth dist.	3918 Jan 17 01:46	26°☾00'35	8.10575 AU	min. Earth dist.	3924 Apr 07 23:40	18°♄28'21	8.36418 AU
direct	3918 Mar 24 23:02	22°☾32'22		direct	3924 Jun 16 00:18	15°♄00'23	
	3918 Jul 01 18:44	0°♄		evening set	3924 Sep 30 05:02	22°♄57'39	
evening set	3918 Jul 06 15:53	0°♄36'46					
conjunction	3918 Jul 24 18:01	2°♄56'03	0°-16'-55	conjunction	3924 Oct 17 18:15	25°♄08'44	2°06'02
minimum elong	3918 Jul 24 18:02	2°♄56'03	0°16'57	minimum elong	3924 Oct 17 18:13	25°♄08'43	2°06'03
max. Earth dist.	3918 Jul 24 20:36	2°♄56'52	10.09695 AU	max. Earth dist.	3924 Oct 17 18:36	25°♄08'50	10.41061 AU
morning rise	3918 Aug 11 21:23	5°♄15'41		morning rise	3924 Nov 04 03:22	27°♄18'31	
retrograde	3918 Nov 24 23:39	13°♄26'25			3924 Nov 27 01:33	0°♄	
opposition	3919 Jan 31 03:07	9°♄57'42	0°-1'-14	retrograde	3925 Feb 13 01:24	4°♄53'38	
min. Earth dist.	3919 Jan 31 00:43	9°♄58'12	8.09424 AU	opposition	3925 Apr 21 08:29	1°♄31'40	2°39'40
asc. node	3919 Feb 12 04:17	8°♄59'00		min. Earth dist.	3925 Apr 21 07:38	1°♄31'50	8.46084 AU
direct	3919 Apr 08 02:28	6°♄29'11			3925 May 11 10:30	30°♄	
evening set	3919 Jul 21 12:28	14°♄36'43		direct	3925 Jun 29 20:28	28°♄04'44	
	3919 Jul 24 13:55	15°♄			3925 Aug 17 07:58	0°♄	
				evening set	3925 Oct 13 19:55	5°♄55'29	
conjunction	3919 Aug 08 15:42	16°♄56'17	0°14'52	conjunction	3925 Oct 31 05:08	8°♄04'05	2°10'43
minimum elong	3919 Aug 08 15:42	16°♄56'16	0°14'51	minimum elong	3925 Oct 31 05:07	8°♄04'04	2°10'44
behind sun begin	3919 Aug 08 13:09	16°♄55'27		max. Earth dist.	3925 Oct 31 05:20	8°♄04'08	10.50923 AU
behind sun end	3919 Aug 08 18:15	16°♄57'05		morning rise	3925 Nov 17 09:59	10°♄11'22	
max. Earth dist.	3919 Aug 08 18:47	16°♄57'16	10.09752 AU		3925 Dec 31 21:05	15°♄	
morning rise	3919 Aug 26 18:50	19°♄15'48		retrograde	3926 Feb 25 20:24	17°♄39'07	
retrograde	3919 Dec 09 05:01	27°♄23'25			3926 Apr 25 12:14	15°♄	
opposition	3920 Feb 14 02:11	23°♄55'27	0°37'56	opposition	3926 May 04 11:47	14°♄18'16	2°41'07
min. Earth dist.	3920 Feb 13 23:19	23°♄56'02	8.10688 AU	min. Earth dist.	3926 May 04 11:13	14°♄18'22	8.56016 AU
direct	3920 Apr 21 07:59	20°♄26'29		direct	3926 Jul 13 10:41	10°♄52'18	
evening set	3920 Aug 04 09:51	28°♄35'31			3926 Sep 25 00:32	15°♄	
	3920 Aug 15 11:06	0°♄		evening set	3926 Oct 27 01:09	18°♄35'52	
conjunction	3920 Aug 22 12:35	0°♄54'32	0°45'38	conjunction	3926 Nov 13 06:45	20°♄42'09	2°08'55
minimum elong	3920 Aug 22 12:33	0°♄54'32	0°45'37	minimum elong	3926 Nov 13 06:46	20°♄42'09	2°08'55
max. Earth dist.	3920 Aug 22 15:58	0°♄55'38	10.12196 AU	max. Earth dist.	3926 Nov 13 06:35	20°♄42'06	10.60772 AU
morning rise	3920 Sep 09 13:51	3°♄13'09		morning rise	3926 Nov 30 07:54	22°♄47'07	
retrograde	3920 Dec 22 06:40	11°♄16'05			3927 Feb 26 03:04	0°♄	
opposition	3921 Feb 27 00:06	7°♄49'06	1°14'40	retrograde	3927 Mar 10 11:09	0°♄08'05	
min. Earth dist.	3921 Feb 26 21:16	7°♄49'41	8.14297 AU		3927 Mar 22 19:00	30°♄	
direct	3921 May 05 14:27	4°♄20'02		opposition	3927 May 17 10:32	26°♄48'13	2°34'51
evening set	3921 Aug 19 05:17	12°♄28'44		min. Earth dist.	3927 May 17 11:01	26°♄48'08	8.65632 AU
				direct	3927 Jul 26 17:00	23°♄23'19	
conjunction	3921 Sep 06 05:54	14°♄46'27	1°13'33		3927 Oct 31 10:57	0°♄	
minimum elong	3921 Sep 06 05:51	14°♄46'26	1°13'33	evening set	3927 Nov 08 21:22	0°♄59'35	
max. Earth dist.	3921 Sep 06 09:02	14°♄47'28	10.16881 AU				
morning rise	3921 Sep 24 04:00	17°♄03'26		conjunction	3927 Nov 25 23:43	3°♄03'48	2°01'06
retrograde	3922 Jan 05 02:49	25°♄00'27		minimum elong	3927 Nov 25 23:44	3°♄03'49	2°01'06
opposition	3922 Mar 12 19:43	21°♄34'39	1°46'41	max. Earth dist.	3927 Nov 25 22:22	3°♄03'23	10.70040 AU
min. Earth dist.	3922 Mar 12 17:29	21°♄35'07	8.20037 AU	morning rise	3927 Dec 12 21:53	5°♄06'48	
direct	3922 May 19 20:28	18°♄05'45		retrograde	3928 Mar 21 19:01	12°♄21'54	
evening set	3922 Sep 02 20:21	26°♄12'17		opposition	3928 May 29 05:06	9°♄02'54	2°21'37
				min. Earth dist.	3928 May 29 07:10	9°♄02'30	8.74423 AU
conjunction	3922 Sep 20 17:43	28°♄28'07	1°36'58	direct	3928 Aug 07 18:34	5°♄39'04	
minimum elong	3922 Sep 20 17:40	28°♄28'06	1°36'58	evening set	3928 Nov 20 09:17	13°♄08'24	
max. Earth dist.	3922 Sep 20 20:03	28°♄28'52	10.23534 AU				



conjunction	3928 Dec 07 08:50	15°♄10'51	1°47'57	conjunction	3935 Feb 14 18:02	24°♄57'46	0°-32'-54
minimum elong	3928 Dec 07 08:52	15°♄10'51	1°47'57	minimum elong	3935 Feb 14 18:01	24°♄57'46	0°32'55
max. Earth dist.	3928 Dec 07 05:44	15°♄09'54	10.78304 AU	max. Earth dist.	3935 Feb 14 15:25	24°♄56'59	10.94898 AU
morning rise	3928 Dec 24 04:51	17°♄12'15		morning rise	3935 Mar 03 10:49	26°♄56'25	
retrograde	3929 Apr 02 23:23	24°♄22'42			3935 Mar 31 07:58	0°♄	
opposition	3929 Jun 10 20:06	21°♄04'19	2°02'23	retrograde	3935 Jun 13 08:31	4°♄06'21	
min. Earth dist.	3929 Jun 10 22:48	21°♄03'48	8.82054 AU	opposition	3935 Aug 22 23:57	0°♄46'27	0°-55'-49
direct	3929 Aug 20 15:33	17°♄41'32		min. Earth dist.	3935 Aug 23 01:33	0°♄46'09	8.93352 AU
evening set	3929 Dec 02 13:53	25°♄04'26			3935 Sep 02 11:49	30°♄	
				direct	3935 Nov 01 05:19	27°♄27'12	
conjunction	3929 Dec 19 11:18	27°♄05'27	1°30'18		3935 Dec 27 21:14	0°♄	
minimum elong	3929 Dec 19 11:20	27°♄05'28	1°30'17	evening set	3936 Feb 09 16:41	4°♄32'49	
max. Earth dist.	3929 Dec 19 07:38	27°♄04'21	10.85288 AU				
morning rise	3930 Jan 05 05:45	29°♄05'36		conjunction	3936 Feb 26 08:53	6°♄31'40	0°-57'-46
	3930 Jan 13 00:56	0°♄		minimum elong	3936 Feb 26 08:51	6°♄31'40	0°57'48
retrograde	3930 Apr 15 01:47	6°♄12'36		max. Earth dist.	3936 Feb 26 07:00	6°♄31'06	10.91333 AU
opposition	3930 Jun 23 08:02	2°♄54'34	1°38'15	morning rise	3936 Mar 14 02:20	8°♄30'58	
min. Earth dist.	3930 Jun 23 10:34	2°♄54'06	8.88280 AU	retrograde	3936 Jun 24 16:36	15°♄45'34	
	3930 Aug 09 09:30	30°♄		opposition	3936 Sep 03 09:45	12°♄24'44	-1°-25'-12
direct	3930 Sep 02 06:22	29°♄32'46		min. Earth dist.	3936 Sep 03 10:55	12°♄24'31	8.88950 AU
	3930 Sep 25 21:25	0°♄		direct	3936 Nov 12 05:27	9°♄05'31	
evening set	3930 Dec 14 12:45	6°♄49'59		evening set	3937 Feb 20 10:32	16°♄12'44	
conjunction	3930 Dec 31 08:33	8°♄49'54	1°09'02	conjunction	3937 Mar 09 03:01	18°♄12'19	-1°-20'-28
minimum elong	3930 Dec 31 08:35	8°♄49'54	1°09'02	minimum elong	3937 Mar 09 02:59	18°♄12'18	1°20'29
max. Earth dist.	3930 Dec 31 05:17	8°♄48'55	10.90764 AU	max. Earth dist.	3937 Mar 09 00:56	18°♄11'42	10.86093 AU
morning rise	3931 Jan 17 01:48	10°♄49'06		morning rise	3937 Mar 25 21:42	20°♄12'35	
retrograde	3931 Apr 27 02:18	17°♄53'55		retrograde	3937 Jul 07 05:28	27°♄32'56	
opposition	3931 Jul 05 17:32	14°♄35'59	1°10'21	opposition	3937 Sep 15 21:55	24°♄11'05	-1°-51'-22
min. Earth dist.	3931 Jul 05 19:51	14°♄35'33	8.92902 AU	min. Earth dist.	3937 Sep 15 23:14	24°♄10'50	8.82967 AU
direct	3931 Sep 14 16:49	11°♄15'01		direct	3937 Nov 24 07:28	20°♄51'40	
evening set	3931 Dec 26 07:10	18°♄27'30		evening set	3938 Mar 04 08:28	28°♄01'47	
					3938 Mar 20 17:46	0°♄	
conjunction	3932 Jan 12 01:38	20°♄26'36	0°45'08	conjunction	3938 Mar 21 01:51	0°♄02'27	-1°-40'00
minimum elong	3932 Jan 12 01:40	20°♄26'36	0°45'08	minimum elong	3938 Mar 21 01:48	0°♄02'26	1°40'01
max. Earth dist.	3932 Jan 11 22:35	20°♄25'41	10.94550 AU	max. Earth dist.	3938 Mar 20 23:55	0°♄01'52	10.79372 AU
morning rise	3932 Jan 28 18:10	22°♄25'11		morning rise	3938 Apr 06 22:14	2°♄04'00	
retrograde	3932 May 08 03:07	29°♄29'11		retrograde	3938 Jul 19 22:35	9°♄31'03	
opposition	3932 Jul 17 01:41	26°♄11'06	0°39'49	opposition	3938 Sep 28 13:23	6°♄08'05	-2°-13'-11
min. Earth dist.	3932 Jul 17 04:30	26°♄10'35	8.95779 AU	min. Earth dist.	3938 Sep 28 14:21	6°♄07'54	8.75622 AU
direct	3932 Sep 25 22:54	22°♄50'49		direct	3938 Dec 06 12:11	2°♄48'21	
evening set	3933 Jan 05 22:26	29°♄59'38		evening set	3939 Mar 16 11:36	10°♄02'30	
	3933 Jan 05 23:43	0°♄					
conjunction	3933 Jan 22 15:45	1°♄58'12	0°19'32	conjunction	3939 Apr 02 06:37	12°♄04'35	-1°-55'-28
minimum elong	3933 Jan 22 15:46	1°♄58'12	0°19'33	minimum elong	3939 Apr 02 06:35	12°♄04'34	1°55'28
max. Earth dist.	3933 Jan 22 12:04	1°♄57'07	10.96533 AU	max. Earth dist.	3939 Apr 02 06:07	12°♄04'26	10.71426 AU
morning rise	3933 Feb 08 08:08	3°♄56'31		morning rise	3939 Apr 19 05:05	14°♄07'44	
retrograde	3933 May 20 01:50	11°♄01'06		retrograde	3939 Aug 01 21:57	21°♄42'12	
opposition	3933 Jul 29 08:58	7°♄42'37	0°07'51	opposition	3939 Oct 11 08:40	18°♄18'03	-2°-29'-29
min. Earth dist.	3933 Jul 29 12:08	7°♄42'01	8.96827 AU	min. Earth dist.	3939 Oct 11 08:26	18°♄18'05	8.67212 AU
direct	3933 Oct 08 01:48	4°♄22'49		direct	3939 Dec 18 21:43	14°♄57'49	
desc. node	3933 Oct 28 20:55	4°♄43'59		evening set	3940 Mar 27 21:20	22°♄17'00	
evening set	3934 Jan 17 12:11	11°♄29'15					
				conjunction	3940 Apr 13 18:43	24°♄20'52	-2°-5'-57
conjunction	3934 Feb 03 04:45	13°♄27'36	0°-6'-52	minimum elong	3940 Apr 13 18:42	24°♄20'52	2°05'58
minimum elong	3934 Feb 03 04:44	13°♄27'36	0°06'52	max. Earth dist.	3940 Apr 13 19:33	24°♄21'07	10.62596 AU
behind sun begin	3934 Feb 02 22:14	13°♄25'41		morning rise	3940 Apr 30 19:53	26°♄25'56	
behind sun end	3934 Feb 03 11:15	13°♄29'31			3940 Jun 01 12:59	0°♄	
max. Earth dist.	3934 Feb 03 00:57	13°♄26'30	10.96651 AU	retrograde	3940 Aug 14 05:47	4°♄08'03	
	3934 Feb 16 04:34	15°♄		opposition	3940 Oct 23 08:07	0°♄42'47	-2°-39'-13
morning rise	3934 Feb 19 21:16	15°♄25'56		min. Earth dist.	3940 Oct 23 06:48	0°♄43'03	8.58106 AU
retrograde	3934 Jun 01 03:20	22°♄32'30			3940 Nov 01 14:53	30°♄	
opposition	3934 Aug 10 15:57	19°♄13'24	0°-24'-25	direct	3940 Dec 30 09:22	27°♄21'55	
min. Earth dist.	3934 Aug 10 18:42	19°♄12'53	8.96010 AU		3941 Feb 24 07:55	0°♄	
direct	3934 Oct 20 04:54	15°♄53'56		evening set	3941 Apr 09 14:31	4°♄46'58	
evening set	3935 Jan 29 01:47	22°♄59'19					



conjunction	3941 Apr 26 14:56	6°♄52'53	-2°-10'-42	max. Earth dist.	3947 Jul 19 03:00	27°♄26'56	10.12155 AU
minimum elong	3941 Apr 26 14:56	6°♄52'53	2°10'43	morning rise	3947 Aug 06 02:31	29°♄45'07	
max. Earth dist.	3941 Apr 26 16:16	6°♄53'17	10.53286 AU		3947 Aug 08 01:51	0°♂	
morning rise	3941 May 13 19:35	9°♄00'09		retrograde	3947 Nov 19 12:41	7°♂56'00	
	3941 Jul 11 08:06	15°♄		opposition	3948 Jan 25 17:48	4°♂27'40	0°-17'-25
retrograde	3941 Aug 27 18:22	16°♄49'49		min. Earth dist.	3948 Jan 25 15:26	4°♂28'10	8.11336 AU
	3941 Oct 15 02:20	15°♄		direct	3948 Apr 01 13:28	1°♂00'02	
opposition	3941 Nov 05 12:07	13°♄23'32	-2°-41'-30	asc. node	3948 Jul 11 05:51	8°♂39'20	
min. Earth dist.	3941 Nov 05 10:20	13°♄23'53	8.48723 AU	evening set	3948 Jul 14 18:06	9°♂05'48	
direct	3942 Jan 12 02:31	10°♄01'50					
	3942 Mar 31 22:07	15°♄		conjunction	3948 Aug 01 20:52	11°♂25'07	0°01'52
evening set	3942 Apr 22 15:48	17°♄33'23		minimum elong	3948 Aug 01 20:53	11°♂25'07	0°01'51
				behind sun begin	3948 Aug 01 13:32	11°♂22'46	
conjunction	3942 May 09 19:55	19°♄41'36	-2°-9'-7	behind sun end	3948 Aug 02 04:15	11°♂27'28	
minimum elong	3942 May 09 19:56	19°♄41'36	2°09'08	max. Earth dist.	3948 Aug 01 23:07	11°♂25'47	10.11063 AU
max. Earth dist.	3942 May 09 21:20	19°♄42'02	10.43942 AU	morning rise	3948 Aug 20 00:09	13°♂44'35	
morning rise	3942 May 27 04:36	21°♄51'14			3948 Aug 30 02:41	15°♂	
retrograde	3942 Sep 10 11:57	29°♄47'56		retrograde	3948 Dec 02 19:03	21°♂53'08	
opposition	3942 Nov 18 20:38	26°♄20'46	-2°-35'-43	opposition	3949 Feb 07 16:58	18°♂25'23	0°21'59
min. Earth dist.	3942 Nov 18 18:52	26°♄21'07	8.39530 AU	min. Earth dist.	3949 Feb 07 15:19	18°♂25'44	8.11369 AU
direct	3943 Jan 25 02:47	22°♄58'09			3949 Apr 08 13:39	15°♄	
	3943 May 01 02:46	0°♂		direct	3949 Apr 15 18:51	14°♂57'05	
evening set	3943 May 06 01:31	0°♂36'26			3949 Apr 23 00:44	15°♂	
				evening set	3949 Jul 29 15:20	23°♂05'09	
conjunction	3943 May 23 10:02	2°♂47'08	-2°00'-54				
minimum elong	3943 May 23 10:04	2°♂47'09	2°00'56	conjunction	3949 Aug 16 18:11	25°♂24'18	0°33'12
max. Earth dist.	3943 May 23 12:12	2°♂47'49	10.35045 AU	minimum elong	3949 Aug 16 18:09	25°♂24'17	0°33'12
morning rise	3943 Jun 09 23:08	4°♂59'14		max. Earth dist.	3949 Aug 16 19:39	25°♂24'46	10.12245 AU
retrograde	3943 Sep 24 11:04	13°♂01'58		morning rise	3949 Sep 03 20:23	27°♂43'13	
opposition	3943 Dec 02 09:23	9°♂34'06	-2°-21'-38		3949 Sep 22 12:25	0°♄	
min. Earth dist.	3943 Dec 02 07:18	9°♂34'31	8.31013 AU	retrograde	3949 Dec 16 21:03	5°♄47'47	
direct	3944 Feb 07 08:48	6°♂10'28		opposition	3950 Feb 21 15:27	2°♄20'48	0°59'58
evening set	3944 May 18 19:41	13°♂55'28		min. Earth dist.	3950 Feb 21 14:07	2°♄21'05	8.13714 AU
					3950 Mar 25 04:22	30°♄	
conjunction	3944 Jun 05 09:02	16°♂08'38	-1°-46'-7	direct	3950 Apr 30 02:15	28°♂52'05	
minimum elong	3944 Jun 05 09:05	16°♂08'39	1°46'08		3950 Jun 04 18:38	0°♄	
max. Earth dist.	3944 Jun 05 12:14	16°♂09'39	10.27056 AU	evening set	3950 Aug 13 11:31	7°♄00'38	
morning rise	3944 Jun 23 02:31	18°♂23'07					
retrograde	3944 Oct 07 14:47	26°♂30'28		conjunction	3950 Aug 31 12:58	9°♄18'49	1°02'30
opposition	3944 Dec 15 01:51	23°♂02'06	-1°-59'-34	minimum elong	3950 Aug 31 12:55	9°♄18'48	1°02'29
min. Earth dist.	3944 Dec 14 23:11	23°♂02'38	8.23607 AU	max. Earth dist.	3950 Aug 31 14:10	9°♄19'12	10.15693 AU
direct	3945 Feb 19 20:45	19°♂37'24		morning rise	3950 Sep 18 12:38	11°♄36'26	
evening set	3945 Jun 01 22:03	27°♂28'46		retrograde	3950 Dec 30 18:08	19°♄35'37	
				opposition	3951 Mar 07 11:53	16°♄09'33	1°34'09
conjunction	3945 Jun 19 16:05	29°♂44'13	-1°-25'-15	min. Earth dist.	3951 Mar 07 10:23	16°♄09'52	8.18256 AU
minimum elong	3945 Jun 19 16:08	29°♂44'14	1°25'16	direct	3951 May 14 09:21	12°♄40'42	
max. Earth dist.	3945 Jun 19 20:09	29°♂45'31	10.20379 AU	evening set	3951 Aug 28 04:25	20°♄47'52	
	3945 Jun 21 17:22	0°♄					
morning rise	3945 Jul 07 13:31	2°♄00'46		conjunction	3951 Sep 15 03:14	23°♄04'27	1°27'56
retrograde	3945 Oct 21 20:53	10°♄11'03		minimum elong	3951 Sep 15 03:11	23°♄04'26	1°27'56
opposition	3945 Dec 28 21:11	6°♄42'25	-1°-30'-25	max. Earth dist.	3951 Sep 15 04:30	23°♄04'51	10.21207 AU
min. Earth dist.	3945 Dec 28 17:58	6°♄43'04	8.17686 AU	morning rise	3951 Oct 02 23:10	25°♄20'07	
direct	3946 Mar 05 14:19	3°♄16'39			3951 Nov 13 03:14	0°♄	
evening set	3946 Jun 16 07:29	11°♄13'44		retrograde	3952 Jan 13 10:19	3°♄12'50	
					3952 Mar 17 16:53	30°♄	
conjunction	3946 Jul 04 05:35	13°♄31'04	0°-59'-18	opposition	3952 Mar 20 05:14	29°♄47'48	2°02'31
minimum elong	3946 Jul 04 05:38	13°♄31'04	0°59'19	min. Earth dist.	3952 Mar 20 03:40	29°♄48'07	8.24709 AU
max. Earth dist.	3946 Jul 04 09:36	13°♄32'21	10.15337 AU	direct	3952 May 27 13:28	26°♄19'05	
morning rise	3946 Jul 22 06:13	15°♄49'14			3952 Aug 03 02:50	0°♄	
retrograde	3946 Nov 05 04:36	24°♄00'41		evening set	3952 Sep 10 15:32	4°♄23'05	
opposition	3947 Jan 11 18:49	20°♄32'03	0°-55'-41				
min. Earth dist.	3947 Jan 11 15:46	20°♄32'40	8.13520 AU	conjunction	3952 Sep 28 10:46	6°♄37'34	1°48'08
direct	3947 Mar 19 12:13	17°♄05'16		minimum elong	3952 Sep 28 10:44	6°♄37'33	1°48'08
evening set	3947 Jun 30 22:40	25°♄07'14		max. Earth dist.	3952 Sep 28 12:03	6°♄37'58	10.28446 AU
				morning rise	3952 Oct 16 02:15	8°♄50'54	
conjunction	3947 Jul 18 23:49	27°♄25'55	0°-29'-41	retrograde	3953 Jan 25 21:30	16°♄36'25	
minimum elong	3947 Jul 18 23:50	27°♄25'55	0°29'43	opposition	3953 Apr 02 19:01	13°♄12'29	2°23'39



min. Earth dist.	3953 Apr 02 17:45	13° $\overline{A}$ 12'44	8.32680 AU		3959 Nov 21 12:00	0° $\overline{B}$	
direct	3953 Jun 10 14:18	9° $\overline{A}$ 44'11		evening set	3959 Dec 09 19:57	2° $\overline{B}$ 04'27	
evening set	3953 Sep 24 18:45	17° $\overline{A}$ 43'25					
				conjunction	3959 Dec 26 16:20	4° $\overline{B}$ 04'42	1°18'33
conjunction	3953 Oct 12 09:54	19° $\overline{A}$ 55'31	2°02'10	minimum elong	3959 Dec 26 16:22	4° $\overline{B}$ 04'43	1°18'33
minimum elong	3953 Oct 12 09:52	19° $\overline{A}$ 55'30	2°02'11	max. Earth dist.	3959 Dec 26 14:01	4° $\overline{B}$ 04'00	10.89001 AU
max. Earth dist.	3953 Oct 12 10:56	19° $\overline{A}$ 55'51	10.36978 AU	morning rise	3960 Jan 12 10:01	6° $\overline{B}$ 04'10	
morning rise	3953 Oct 29 20:47	22° $\overline{A}$ 06'20		retrograde	3960 Apr 21 06:27	13° $\overline{B}$ 09'06	
retrograde	3954 Feb 08 00:45	29° $\overline{A}$ 44'22		opposition	3960 Jun 29 19:18	9° $\overline{B}$ 51'03	1°22'44
opposition	3954 Apr 16 04:31	26° $\overline{A}$ 21'34	2°36'45	min. Earth dist.	3960 Jun 29 21:31	9° $\overline{B}$ 50'38	8.91782 AU
min. Earth dist.	3954 Apr 16 04:12	26° $\overline{A}$ 21'37	8.41702 AU	direct	3960 Sep 08 18:26	6° $\overline{B}$ 29'38	
direct	3954 Jun 24 11:36	22° $\overline{A}$ 53'53		evening set	3960 Dec 20 15:21	13° $\overline{B}$ 43'24	
	3954 Oct 02 01:04	0° $\overline{M}$					
evening set	3954 Oct 08 13:10	0° $\overline{M}$ 47'09		conjunction	3961 Jan 06 10:10	15° $\overline{B}$ 42'39	0°55'43
				minimum elong	3961 Jan 06 10:12	15° $\overline{B}$ 42'39	0°55'43
conjunction	3954 Oct 26 00:08	2° $\overline{M}$ 56'46	2°09'38	max. Earth dist.	3961 Jan 06 07:18	15° $\overline{B}$ 41'48	10.94074 AU
minimum elong	3954 Oct 26 00:07	2° $\overline{M}$ 56'46	2°09'38	morning rise	3961 Jan 23 03:04	17° $\overline{B}$ 41'19	
max. Earth dist.	3954 Oct 26 00:06	2° $\overline{M}$ 56'46	10.46324 AU	retrograde	3961 May 03 06:12	24° $\overline{B}$ 44'45	
morning rise	3954 Nov 12 06:43	5° $\overline{M}$ 05'05		opposition	3961 Jul 12 03:03	21° $\overline{B}$ 26'50	0°53'16
retrograde	3955 Feb 20 21:21	12° $\overline{M}$ 35'40		min. Earth dist.	3961 Jul 12 04:53	21° $\overline{B}$ 26'30	8.95977 AU
opposition	3955 Apr 29 09:15	9° $\overline{M}$ 13'57	2°41'36	direct	3961 Sep 21 02:24	18° $\overline{B}$ 06'23	
min. Earth dist.	3955 Apr 29 09:54	9° $\overline{M}$ 13'50	8.51281 AU	evening set	3962 Jan 01 06:59	25° $\overline{B}$ 15'56	
direct	3955 Jul 08 03:42	5° $\overline{M}$ 47'05					
evening set	3955 Oct 21 22:10	13° $\overline{M}$ 33'34		conjunction	3962 Jan 18 00:45	27° $\overline{B}$ 14'30	0°30'47
	3955 Nov 02 16:58	15° $\overline{M}$		minimum elong	3962 Jan 18 00:46	27° $\overline{B}$ 14'30	0°30'47
				max. Earth dist.	3962 Jan 17 22:39	27° $\overline{B}$ 13'52	10.97391 AU
conjunction	3955 Nov 08 05:12	15° $\overline{M}$ 40'49	2°10'31	morning rise	3962 Feb 03 17:09	29° $\overline{B}$ 12'42	
minimum elong	3955 Nov 08 05:12	15° $\overline{M}$ 40'49	2°10'31		3962 Feb 10 13:38	0° $\approx$	
max. Earth dist.	3955 Nov 08 03:55	15° $\overline{M}$ 40'25	10.55989 AU	retrograde	3962 May 15 05:38	6° $\approx$ 16'01	
morning rise	3955 Nov 25 08:00	17° $\overline{M}$ 46'46		opposition	3962 Jul 24 09:39	2° $\approx$ 58'00	0°21'51
retrograde	3956 Mar 04 12:29	25° $\overline{M}$ 10'20		min. Earth dist.	3962 Jul 24 10:57	2° $\approx$ 57'46	8.98347 AU
opposition	3956 May 11 09:30	21° $\overline{M}$ 49'38	2°38'30		3962 Sep 11 23:24	30° $\overline{R}$ $\overline{B}$	
min. Earth dist.	3956 May 11 10:22	21° $\overline{M}$ 49'28	8.60923 AU	direct	3962 Oct 03 05:25	29° $\overline{B}$ 38'22	
direct	3956 Jul 20 13:29	18° $\overline{M}$ 23'45			3962 Oct 24 06:05	0° $\approx$	
evening set	3956 Nov 02 21:37	26° $\overline{M}$ 03'00		evening set	3963 Jan 12 20:36	6° $\approx$ 44'53	
conjunction	3956 Nov 20 01:13	28° $\overline{M}$ 08'04	2°05'09	conjunction	3963 Jan 29 13:30	8° $\approx$ 43'04	0°04'46
minimum elong	3956 Nov 20 01:14	28° $\overline{M}$ 08'04	2°05'10	minimum elong	3963 Jan 29 13:30	8° $\approx$ 43'04	0°04'46
max. Earth dist.	3956 Nov 19 23:38	28° $\overline{M}$ 07'35	10.65500 AU	behind sun begin	3963 Jan 29 06:41	8° $\approx$ 41'04	
	3956 Dec 05 09:04	0° $\overline{J}$		behind sun end	3963 Jan 29 20:19	8° $\approx$ 45'04	
morning rise	3956 Dec 07 00:46	0° $\overline{J}$ 11'55		max. Earth dist.	3963 Jan 29 11:46	8° $\approx$ 42'36	10.98817 AU
retrograde	3957 Mar 16 21:45	7° $\overline{J}$ 29'14		morning rise	3963 Feb 15 05:40	10° $\approx$ 41'06	
opposition	3957 May 24 05:20	4° $\overline{J}$ 09'24	2°28'06		3963 Mar 28 16:11	15° $\approx$	
min. Earth dist.	3957 May 24 05:54	4° $\overline{J}$ 09'18	8.70174 AU	desc. node	3963 Apr 06 16:11	15° $\approx$ 44'09	
direct	3957 Aug 02 18:13	0° $\overline{J}$ 44'39		retrograde	3963 May 27 06:44	17° $\approx$ 45'43	
evening set	3957 Nov 15 12:21	8° $\overline{J}$ 16'40			3963 Jul 29 07:03	15° $\overline{R}$ $\approx$	
				opposition	3963 Aug 05 16:01	14° $\approx$ 27'23	0°-10'-19
conjunction	3957 Dec 02 13:10	10° $\overline{J}$ 19'50	1°54'11	min. Earth dist.	3963 Aug 05 17:26	14° $\approx$ 27'07	8.98808 AU
minimum elong	3957 Dec 02 13:11	10° $\overline{J}$ 19'50	1°54'11	direct	3963 Oct 15 07:03	11° $\approx$ 08'21	
max. Earth dist.	3957 Dec 02 11:57	10° $\overline{J}$ 19'28	10.74424 AU		3963 Dec 25 18:42	15° $\approx$	
morning rise	3957 Dec 19 10:03	12° $\overline{J}$ 21'52		evening set	3964 Jan 24 09:37	18° $\approx$ 13'08	
retrograde	3958 Mar 29 04:26	19° $\overline{J}$ 33'53					
opposition	3958 Jun 05 21:02	16° $\overline{J}$ 14'49	2°11'18	conjunction	3964 Feb 10 01:48	20° $\approx$ 11'14	0°-21'-33
min. Earth dist.	3958 Jun 05 21:49	16° $\overline{J}$ 14'40	8.78627 AU	minimum elong	3964 Feb 10 01:47	20° $\approx$ 11'14	0°21'34
direct	3958 Aug 15 15:49	12° $\overline{J}$ 51'13		max. Earth dist.	3964 Feb 09 23:29	20° $\approx$ 10'33	10.98316 AU
evening set	3958 Nov 27 19:22	20° $\overline{J}$ 16'24		morning rise	3964 Feb 26 18:16	22° $\approx$ 09'25	
				retrograde	3964 Jun 07 09:01	29° $\approx$ 16'41	
conjunction	3958 Dec 14 17:50	22° $\overline{J}$ 17'57	1°38'21	opposition	3964 Aug 16 23:03	25° $\approx$ 57'48	0°-42'-9
minimum elong	3958 Dec 14 17:52	22° $\overline{J}$ 17'58	1°38'21	min. Earth dist.	3964 Aug 17 01:01	25° $\approx$ 57'26	8.97354 AU
max. Earth dist.	3958 Dec 14 16:27	22° $\overline{J}$ 17'32	10.82367 AU	direct	3964 Oct 26 06:35	22° $\approx$ 39'09	
morning rise	3958 Dec 31 12:46	24° $\overline{J}$ 18'32		evening set	3965 Feb 03 23:13	29° $\approx$ 43'29	
	3959 Feb 27 18:28	0° $\overline{B}$			3965 Feb 06 07:44	0° $\overline{K}$	
retrograde	3959 Apr 10 07:48	1° $\overline{B}$ 26'21					
	3959 May 23 00:34	30° $\overline{R}$ $\overline{J}$		conjunction	3965 Feb 20 15:08	1° $\overline{K}$ 41'48	0°-46'-59
opposition	3959 Jun 18 09:31	28° $\overline{J}$ 07'54	1°49'08	minimum elong	3965 Feb 20 15:07	1° $\overline{K}$ 41'48	0°47'01
min. Earth dist.	3959 Jun 18 11:08	28° $\overline{J}$ 07'36	8.85926 AU	max. Earth dist.	3965 Feb 20 12:35	1° $\overline{K}$ 41'03	10.95895 AU
direct	3959 Aug 28 06:19	24° $\overline{J}$ 45'27		morning rise	3965 Mar 09 08:15	3° $\overline{K}$ 40'28	



retrograde	3965 Jun 19 13:21	10° <del>✕</del> 51'43		min. Earth dist.	3971 Nov 13 03:03	20° <del>8</del> 41'25	8.44343 AU
opposition	3965 Aug 29 07:16	7° <del>✕</del> 32'02	-1°-12'-26	direct	3972 Jan 19 15:35	17° <del>8</del> 19'02	
min. Earth dist.	3965 Aug 29 09:03	7° <del>✕</del> 31'42	8.93999 AU	evening set	3972 Apr 29 07:37	24° <del>8</del> 53'39	
direct	3965 Nov 07 07:15	4° <del>✕</del> 13'31					
evening set	3966 Feb 15 15:02	11° <del>✕</del> 18'46		conjunction	3972 May 16 14:08	27° <del>8</del> 03'06	-2°-5'-28
				minimum elong	3972 May 16 14:09	27° <del>8</del> 03'07	2°05'29
conjunction	3966 Mar 04 07:12	13° <del>✕</del> 17'39	-1°-10'-41	max. Earth dist.	3972 May 16 15:18	27° <del>8</del> 03'28	10.39370 AU
minimum elong	3966 Mar 04 07:10	13° <del>✕</del> 17'38	1°10'42	morning rise	3972 Jun 03 00:58	29° <del>8</del> 13'58	
max. Earth dist.	3966 Mar 04 05:20	13° <del>✕</del> 17'05	10.91583 AU		3972 Jun 09 07:54	0° <del>II</del>	
morning rise	3966 Mar 21 01:07	15° <del>✕</del> 17'05		retrograde	3972 Sep 17 10:58	7° <del>II</del> 13'39	
retrograde	3966 Jul 02 00:17	22° <del>✕</del> 33'30		opposition	3972 Nov 25 14:04	3° <del>II</del> 45'51	-2°-29'-5
opposition	3966 Sep 10 17:25	19° <del>✕</del> 12'50	-1°-40'-4	min. Earth dist.	3972 Nov 25 12:39	3° <del>II</del> 46'08	8.34805 AU
min. Earth dist.	3966 Sep 10 18:36	19° <del>✕</del> 12'37	8.88797 AU	direct	3973 Jan 31 16:51	0° <del>II</del> 22'26	
direct	3966 Nov 19 09:06	15° <del>✕</del> 54'14		evening set	3973 May 12 21:30	8° <del>II</del> 04'04	
evening set	3967 Feb 27 10:21	23° <del>✕</del> 01'44					
				conjunction	3973 May 30 08:36	10° <del>II</del> 16'05	-1°-53'-41
conjunction	3967 Mar 16 03:12	25° <del>✕</del> 01'31	-1°-31'-40	minimum elong	3973 May 30 08:38	10° <del>II</del> 16'06	1°53'43
minimum elong	3967 Mar 16 03:09	25° <del>✕</del> 01'31	1°31'41	max. Earth dist.	3973 May 30 09:56	10° <del>II</del> 16'31	10.30251 AU
max. Earth dist.	3967 Mar 16 01:46	25° <del>✕</del> 01'06	10.85473 AU	morning rise	3973 Jun 16 23:58	12° <del>II</del> 29'29	
morning rise	3967 Apr 01 22:23	27° <del>✕</del> 02'05		retrograde	3973 Oct 01 13:07	20° <del>II</del> 34'45	
	3967 Apr 28 12:55	0° <del>Y</del>		opposition	3973 Dec 09 04:34	17° <del>II</del> 06'12	-2°-10'-41
retrograde	3967 Jul 14 15:26	4° <del>Y</del> 24'48		min. Earth dist.	3973 Dec 09 03:02	17° <del>II</del> 06'30	8.26185 AU
opposition	3967 Sep 23 06:41	1° <del>Y</del> 03'01	-2°-3'-52	direct	3974 Feb 14 01:09	13° <del>II</del> 41'32	
min. Earth dist.	3967 Sep 23 07:30	1° <del>Y</del> 02'52	8.81881 AU	evening set	3974 May 26 19:41	21° <del>II</del> 30'03	
	3967 Oct 07 11:04	30° <del>R</del> <del>✕</del>					
direct	3967 Dec 01 10:47	27° <del>✕</del> 44'07		conjunction	3974 Jun 13 11:27	23° <del>II</del> 44'32	-1°-35'-33
	3968 Jan 22 23:57	0° <del>Y</del>		minimum elong	3974 Jun 13 11:30	23° <del>II</del> 44'33	1°35'35
evening set	3968 Mar 10 10:24	4° <del>Y</del> 55'10		max. Earth dist.	3974 Jun 13 12:55	23° <del>II</del> 45'00	10.22301 AU
				morning rise	3974 Jul 01 07:12	26° <del>II</del> 00'16	
conjunction	3968 Mar 27 04:25	6° <del>Y</del> 56'14	-1°-49'00		3974 Aug 04 15:39	0° <del>☾</del>	
minimum elong	3968 Mar 27 04:23	6° <del>Y</del> 56'13	1°49'01	retrograde	3974 Oct 15 17:16	4° <del>☾</del> 09'39	
max. Earth dist.	3968 Mar 27 02:26	6° <del>Y</del> 55'38	10.77776 AU	opposition	3974 Dec 22 22:42	0° <del>☾</del> 40'36	-1°-44'-40
morning rise	3968 Apr 13 01:37	8° <del>Y</del> 58'17		min. Earth dist.	3974 Dec 22 21:11	0° <del>☾</del> 40'54	8.18960 AU
retrograde	3968 Jul 26 11:47	16° <del>Y</del> 28'12			3974 Dec 31 07:48	30° <del>R</del> <del>II</del>	
opposition	3968 Oct 04 23:38	13° <del>Y</del> 05'12	-2°-22'-43	direct	3975 Feb 27 16:43	27° <del>II</del> 14'45	
min. Earth dist.	3968 Oct 05 00:46	13° <del>Y</del> 04'59	8.73544 AU		3975 Apr 24 22:01	0° <del>☾</del>	
direct	3968 Dec 12 16:43	9° <del>Y</del> 45'45		evening set	3975 Jun 10 01:44	5° <del>☾</del> 09'39	
evening set	3969 Mar 22 16:34	17° <del>Y</del> 01'32					
				conjunction	3975 Jun 27 21:58	7° <del>☾</del> 26'19	-1°-11'-48
conjunction	3969 Apr 08 12:30	19° <del>Y</del> 04'15	-2°-1'-48	minimum elong	3975 Jun 27 22:01	7° <del>☾</del> 26'20	1°11'50
minimum elong	3969 Apr 08 12:29	19° <del>Y</del> 04'14	2°01'48	max. Earth dist.	3975 Jun 27 23:51	7° <del>☾</del> 26'56	10.15965 AU
max. Earth dist.	3969 Apr 08 10:23	19° <del>Y</del> 03'35	10.68863 AU	morning rise	3975 Jul 15 21:30	9° <del>☾</del> 44'01	
morning rise	3969 Apr 25 12:20	21° <del>Y</del> 08'08		retrograde	3975 Oct 29 23:52	17° <del>☾</del> 55'42	
retrograde	3969 Aug 08 14:27	28° <del>Y</del> 45'42		opposition	3976 Jan 05 19:28	14° <del>☾</del> 26'28	-1°-12'-17
opposition	3969 Oct 17 20:29	25° <del>Y</del> 21'25	-2°-35'-31	min. Earth dist.	3976 Jan 05 17:46	14° <del>☾</del> 26'49	8.13548 AU
min. Earth dist.	3969 Oct 17 21:42	25° <del>Y</del> 21'11	8.64201 AU	direct	3976 Mar 12 13:05	10° <del>☾</del> 59'30	
direct	3969 Dec 25 02:49	22° <del>Y</del> 01'11		evening set	3976 Jun 23 14:31	18° <del>☾</del> 59'58	
evening set	3970 Apr 04 05:38	29° <del>Y</del> 22'39					
	3970 Apr 09 08:36	0° <del>8</del>		conjunction	3976 Jul 11 14:29	21° <del>☾</del> 18'20	0°-43'-39
				minimum elong	3976 Jul 11 14:31	21° <del>☾</del> 18'21	0°43'41
conjunction	3970 Apr 21 04:23	1° <del>8</del> 27'21	-2°-9'-13	max. Earth dist.	3976 Jul 11 17:06	21° <del>☾</del> 19'11	10.11609 AU
minimum elong	3970 Apr 21 04:23	1° <del>8</del> 27'20	2°09'14	morning rise	3976 Jul 29 16:40	23° <del>☾</del> 37'24	
max. Earth dist.	3970 Apr 21 03:12	1° <del>8</del> 26'59	10.59172 AU		3976 Sep 27 15:30	0° <del>♈</del>	
morning rise	3970 May 08 07:20	3° <del>8</del> 33'20		retrograde	3976 Nov 12 07:52	1° <del>♈</del> 49'29	
retrograde	3970 Aug 21 22:23	11° <del>8</del> 18'43			3976 Dec 28 16:01	30° <del>R</del> <del>☾</del>	
opposition	3970 Oct 30 21:53	7° <del>8</del> 53'10	-2°-41'-18	opposition	3977 Jan 18 18:08	28° <del>☾</del> 20'22	0°-35'-19
min. Earth dist.	3970 Oct 30 22:22	7° <del>8</del> 53'04	8.54307 AU	min. Earth dist.	3977 Jan 18 15:48	28° <del>☾</del> 20'51	8.10268 AU
direct	3971 Jan 06 18:35	4° <del>8</del> 31'59		direct	3977 Mar 26 13:18	24° <del>☾</del> 52'29	
evening set	3971 Apr 17 02:21	11° <del>8</del> 59'48			3977 Jun 13 21:05	0° <del>♈</del>	
				evening set	3977 Jul 08 08:22	2° <del>♈</del> 57'20	
conjunction	3971 May 04 04:41	14° <del>8</del> 06'46	-2°-10'-36	conjunction	3977 Jul 26 10:45	5° <del>♈</del> 16'42	0°-12'-47
minimum elong	3971 May 04 04:41	14° <del>8</del> 06'46	2°10'37	minimum elong	3977 Jul 26 10:45	5° <del>♈</del> 16'42	0°12'48
max. Earth dist.	3971 May 04 05:05	14° <del>8</del> 06'54	10.49176 AU	behind sun begin	3977 Jul 26 06:19	5° <del>♈</del> 15'17	
	3971 May 11 07:35	15° <del>8</del>		behind sun end	3977 Jul 26 15:11	5° <del>♈</del> 18'07	
morning rise	3971 May 21 11:17	16° <del>8</del> 15'07		max. Earth dist.	3977 Jul 26 13:59	5° <del>♈</del> 17'44	10.09492 AU
retrograde	3971 Sep 04 13:22	24° <del>8</del> 08'03		morning rise	3977 Aug 13 14:03	7° <del>♈</del> 36'23	
opposition	3971 Nov 13 03:49	20° <del>8</del> 41'16	-2°-39'-18				



	3977 Oct 28 06:47	15°♈		retrograde	3984 Feb 15 13:21	7°♍07'46	
retrograde	3977 Nov 26 15:42	15°♈46'58		opposition	3984 Apr 22 21:13	3°♍45'51	2°40'14
asc. node	3977 Dec 26 04:13	14°♈59'49		min. Earth dist.	3984 Apr 22 19:49	3°♍46'07	8.46968 AU
	3977 Dec 26 02:49	15°♈♌		direct	3984 Jul 01 10:26	0°♍19'00	
opposition	3978 Feb 01 17:33	12°♈18'18	0°03'55	evening set	3984 Oct 15 08:55	8°♍09'03	
min. Earth dist.	3978 Feb 01 14:41	12°♈18'53	8.09330 AU				
direct	3978 Apr 09 17:09	8°♈49'42		conjunction	3984 Nov 01 17:50	10°♍17'25	2°10'45
	3978 Jul 07 07:20	15°♈		minimum elong	3984 Nov 01 17:50	10°♍17'25	2°10'45
evening set	3978 Jul 23 05:08	16°♈57'31		max. Earth dist.	3984 Nov 01 18:53	10°♍17'45	10.51850 AU
				morning rise	3984 Nov 18 22:14	12°♍24'28	
conjunction	3978 Aug 10 08:23	19°♈17'05	0°18'58		3984 Dec 11 05:05	15°♍	
minimum elong	3978 Aug 10 08:21	19°♈17'04	0°18'57	retrograde	3985 Feb 27 09:11	19°♍51'32	
max. Earth dist.	3978 Aug 10 11:56	19°♈18'13	10.09765 AU	opposition	3985 May 06 00:13	16°♍30'46	2°40'36
morning rise	3978 Aug 28 11:15	21°♈36'33		min. Earth dist.	3985 May 05 23:38	16°♍30'53	8.56979 AU
retrograde	3978 Dec 10 20:15	29°♈43'51			3985 May 26 03:31	15°♈♍	
opposition	3979 Feb 15 16:40	26°♈15'55	0°42'55	direct	3985 Jul 14 22:22	13°♍04'55	
min. Earth dist.	3979 Feb 15 13:41	26°♈16'32	8.10814 AU		3985 Sep 01 18:23	15°♍	
direct	3979 Apr 23 23:16	22°♈46'54		evening set	3985 Oct 28 13:14	20°♍47'41	
	3979 Jul 30 14:45	0°♈♐					
evening set	3979 Aug 07 02:23	0°♈56'01		conjunction	3985 Nov 14 18:28	22°♍53'45	2°08'06
				minimum elong	3985 Nov 14 18:29	22°♍53'45	2°08'07
conjunction	3979 Aug 25 04:54	3°♈14'57	0°49'27	max. Earth dist.	3985 Nov 14 18:36	22°♍53'47	10.61785 AU
minimum elong	3979 Aug 25 04:51	3°♈14'56	0°49'27	morning rise	3985 Dec 01 19:19	24°♍58'32	
max. Earth dist.	3979 Aug 25 08:14	3°♈16'01	10.12425 AU		3986 Jan 18 11:20	0°♈♌	
morning rise	3979 Sep 12 05:52	5°♈33'25		retrograde	3986 Mar 11 21:17	2°♈♌18'47	
retrograde	3979 Dec 24 20:54	13°♈35'54			3986 May 05 12:39	30°♈♍	
opposition	3980 Feb 29 14:27	10°♈08'58	1°19'08	opposition	3986 May 18 22:33	28°♍59'01	2°33'21
min. Earth dist.	3980 Feb 29 12:03	10°♈09'28	8.14633 AU	min. Earth dist.	3986 May 18 23:16	28°♍58'53	8.66696 AU
direct	3980 May 07 05:46	6°♈39'49		direct	3986 Jul 28 05:44	25°♍34'13	
evening set	3980 Aug 20 21:35	14°♈48'25			3986 Oct 13 05:42	0°♈♌	
				evening set	3986 Nov 10 08:32	3°♈♌09'36	
conjunction	3980 Sep 07 21:48	17°♈05'59	1°16'52				
minimum elong	3980 Sep 07 21:45	17°♈05'58	1°16'52	conjunction	3986 Nov 27 10:31	5°♈♌13'35	1°59'32
max. Earth dist.	3980 Sep 08 00:16	17°♈06'47	10.17307 AU	minimum elong	3986 Nov 27 10:33	5°♈♌13'36	1°59'32
morning rise	3980 Sep 25 19:33	19°♈22'47		max. Earth dist.	3986 Nov 27 08:54	5°♈♌13'06	10.71161 AU
retrograde	3981 Jan 06 16:36	27°♈19'11		morning rise	3986 Dec 14 08:35	7°♈♌16'24	
opposition	3981 Mar 14 09:45	23°♈53'27	1°50'23	retrograde	3987 Mar 24 04:35	14°♈♌30'46	
min. Earth dist.	3981 Mar 14 08:02	23°♈53'48	8.20559 AU	opposition	3987 May 31 16:27	11°♈♌11'50	2°19'15
direct	3981 May 21 11:09	20°♈24'30		min. Earth dist.	3987 May 31 18:19	11°♈♌11'28	8.75583 AU
evening set	3981 Sep 04 12:03	28°♈30'45		direct	3987 Aug 10 07:39	7°♈♌48'06	
	3981 Sep 16 07:13	0°♈♌		evening set	3987 Nov 22 19:30	15°♈♌16'28	
conjunction	3981 Sep 22 08:56	0°♈46'23	1°39'35	conjunction	3987 Dec 09 18:51	17°♈♌18'42	1°45'44
minimum elong	3981 Sep 22 08:53	0°♈46'22	1°39'36	minimum elong	3987 Dec 09 18:53	17°♈♌18'43	1°45'44
max. Earth dist.	3981 Sep 22 10:33	0°♈46'54	10.24131 AU	max. Earth dist.	3987 Dec 09 15:53	17°♈♌17'48	10.79488 AU
morning rise	3981 Oct 10 02:38	3°♈00'59		morning rise	3987 Dec 26 14:45	19°♈♌19'54	
retrograde	3982 Jan 20 06:21	10°♈50'27		retrograde	3988 Apr 04 09:04	26°♈♌29'37	
opposition	3982 Mar 28 01:46	7°♈26'00	2°14'56	opposition	3988 Jun 12 06:49	23°♈♌11'18	1°59'19
min. Earth dist.	3982 Mar 28 00:20	7°♈26'18	8.28240 AU	min. Earth dist.	3988 Jun 12 08:48	23°♈♌10'56	8.83224 AU
direct	3982 Jun 04 14:57	3°♈57'31		direct	3988 Aug 22 02:59	19°♈♌48'41	
evening set	3982 Sep 18 19:34	11°♈59'42		evening set	3988 Dec 03 23:12	27°♈♌10'36	
conjunction	3982 Oct 06 12:34	14°♈13'01	1°56'30	conjunction	3988 Dec 20 20:32	29°♈♌11'26	1°27'34
minimum elong	3982 Oct 06 12:32	14°♈13'01	1°56'31	minimum elong	3988 Dec 20 20:34	29°♈♌11'27	1°27'34
max. Earth dist.	3982 Oct 06 13:42	14°♈13'23	10.32494 AU	max. Earth dist.	3988 Dec 20 17:41	29°♈♌10'35	10.86436 AU
morning rise	3982 Oct 24 01:48	16°♈25'10			3988 Dec 27 14:19	0°♈♌	
retrograde	3983 Feb 02 12:21	24°♈07'11		morning rise	3989 Jan 06 14:46	1°♈♌11'24	
opposition	3983 Apr 10 13:44	20°♈44'02	2°31'42	retrograde	3989 Apr 16 11:00	8°♈♌17'48	
min. Earth dist.	3983 Apr 10 12:16	20°♈44'19	8.37213 AU	opposition	3989 Jun 24 18:15	4°♈♌59'50	1°34'38
direct	3983 Jun 18 15:45	17°♈16'16		min. Earth dist.	3989 Jun 24 20:18	4°♈♌59'27	8.89374 AU
evening set	3983 Oct 02 18:54	25°♈12'56		direct	3989 Sep 03 17:08	1°♈♌38'12	
				evening set	3989 Dec 15 21:22	8°♈♌54'33	
conjunction	3983 Oct 20 07:48	27°♈23'46	2°06'57				
minimum elong	3983 Oct 20 07:47	27°♈23'46	2°06'57	conjunction	3990 Jan 01 17:04	10°♈♌54'18	1°05'55
max. Earth dist.	3983 Oct 20 08:48	27°♈24'05	10.41906 AU	minimum elong	3990 Jan 01 17:06	10°♈♌54'18	1°05'55
morning rise	3983 Nov 06 16:27	29°♈33'19		max. Earth dist.	3990 Jan 01 14:13	10°♈♌53'27	10.91800 AU
	3983 Nov 10 07:58	0°♈♌		morning rise	3990 Jan 18 10:11	12°♈♌53'21	



retrograde	3990 Apr 28 11:58	19°♄57'41		conjunction	3996 Mar 10 10:33	20°♄14'44	-1°-23'-9
opposition	3990 Jul 07 03:16	16°♄39'52	1°06'20	minimum elong	3996 Mar 10 10:30	20°♄14'43	1°23'10
min. Earth dist.	3990 Jul 07 05:59	16°♄39'21	8.93861 AU	max. Earth dist.	3996 Mar 10 07:47	20°♄13'54	10.85752 AU
direct	3990 Sep 16 01:56	13°♄19'03		morning rise	3996 Mar 27 05:23	22°♄15'04	
evening set	3990 Dec 27 15:17	20°♄30'49		retrograde	3996 Jul 08 13:19	29°♄35'53	
				opposition	3996 Sep 17 06:54	26°♄13'57	-1°-54'-23
conjunction	3991 Jan 13 09:33	22°♄29'47	0°41'45	min. Earth dist.	3996 Sep 17 08:41	26°♄13'37	8.82506 AU
minimum elong	3991 Jan 13 09:35	22°♄29'47	0°41'46	direct	3996 Nov 25 15:26	22°♄54'31	
max. Earth dist.	3991 Jan 13 05:47	22°♄28'39	10.95425 AU		3997 Mar 04 23:42	0°♄	
morning rise	3991 Jan 30 02:08	24°♄28'16		evening set	3997 Mar 05 16:14	0°♄04'54	
	3991 Mar 27 23:22	0°♄					
retrograde	3991 May 10 10:27	1°♄31'56		conjunction	3997 Mar 22 09:48	2°♄05'39	-1°-42'-11
	3991 Jun 24 07:38	30°♄		minimum elong	3997 Mar 22 09:45	2°♄05'38	1°42'12
opposition	3991 Jul 19 10:59	28°♄13'57	0°35'35	max. Earth dist.	3997 Mar 22 08:10	2°♄05'09	10.78787 AU
min. Earth dist.	3991 Jul 19 14:27	28°♄13'18	8.96556 AU	morning rise	3997 Apr 08 06:15	4°♄07'18	
direct	3991 Sep 28 07:22	24°♄53'48		retrograde	3997 Jul 21 07:39	11°♄34'58	
	3991 Dec 21 03:24	0°♄		opposition	3997 Sep 29 22:30	8°♄11'52	-2°-15'-31
evening set	3992 Jan 08 06:09	2°♄02'06		min. Earth dist.	3997 Sep 29 23:14	8°♄11'43	8.74924 AU
				direct	3997 Dec 07 21:46	4°♄52'04	
conjunction	3992 Jan 24 23:20	4°♄00'33	0°16'03	evening set	3998 Mar 17 19:58	12°♄06'37	
minimum elong	3992 Jan 24 23:21	4°♄00'33	0°16'04				
behind sun begin	3992 Jan 24 22:14	4°♄00'14		conjunction	3998 Apr 03 15:12	14°♄08'51	-1°-57'-2
behind sun end	3992 Jan 25 00:27	4°♄00'53		minimum elong	3998 Apr 03 15:11	14°♄08'51	1°57'03
max. Earth dist.	3992 Jan 24 19:09	3°♄59'19	10.97204 AU	max. Earth dist.	3998 Apr 03 14:53	14°♄08'45	10.70609 AU
morning rise	3992 Feb 10 15:46	5°♄58'47		morning rise	3998 Apr 20 13:46	16°♄12'09	
retrograde	3992 May 21 10:14	13°♄03'14		retrograde	3998 Aug 03 09:33	23°♄47'17	
opposition	3992 Jul 30 17:56	9°♄44'49	0°03'33	opposition	3998 Oct 12 17:59	20°♄23'00	-2°-31'-1
min. Earth dist.	3992 Jul 30 21:03	9°♄44'14	8.97382 AU	min. Earth dist.	3998 Oct 12 17:36	20°♄23'05	8.66293 AU
desc. node	3992 Sep 10 06:45	7°♄05'28		direct	3998 Dec 20 05:34	17°♄02'41	
direct	3992 Oct 09 11:58	6°♄25'09		evening set	3999 Mar 30 06:21	24°♄22'26	
evening set	3993 Jan 18 19:32	13°♄31'12					
	3993 Jan 31 09:00	15°♄		conjunction	3999 Apr 16 03:54	26°♄26'27	-2°-6'-49
conjunction	3993 Feb 04 12:08	15°♄29'30	0°-10'-20	minimum elong	3999 Apr 16 03:53	26°♄26'27	2°06'50
minimum elong	3993 Feb 04 12:07	15°♄29'30	0°10'20	max. Earth dist.	3999 Apr 16 04:00	26°♄26'29	10.61579 AU
behind sun begin	3993 Feb 04 06:33	15°♄27'51		morning rise	3999 May 03 05:21	28°♄31'44	
behind sun end	3993 Feb 04 17:41	15°♄31'08			3999 May 15 16:12	0°♄	
max. Earth dist.	3993 Feb 04 08:48	15°♄28'31	10.97085 AU	retrograde	3999 Aug 16 16:23	6°♄14'36	
morning rise	3993 Feb 21 04:34	17°♄27'46		opposition	3999 Oct 25 17:59	2°♄49'11	-2°-39'-51
retrograde	3993 Jun 02 12:25	24°♄34'22		min. Earth dist.	3999 Oct 25 17:08	2°♄49'21	8.57003 AU
opposition	3993 Aug 12 00:46	21°♄15'17	0°-28'-36		3999 Dec 08 00:35	30°♄	
min. Earth dist.	3993 Aug 12 03:02	21°♄14'52	8.96318 AU	direct	4000 Jan 01 17:29	29°♄28'09	
direct	3993 Oct 21 12:45	17°♄55'57			4000 Jan 26 05:11	0°♄	
evening set	3994 Jan 30 09:02	25°♄01'05		evening set	4000 Apr 11 00:12	6°♄53'55	
conjunction	3994 Feb 16 01:18	26°♄59'31	0°-36'-14	conjunction	4000 Apr 28 00:50	9°♄00'04	-2°-10'-48
minimum elong	3994 Feb 16 01:17	26°♄59'30	0°36'16	minimum elong	4000 Apr 28 00:51	9°♄00'04	2°10'48
max. Earth dist.	3994 Feb 15 22:48	26°♄58'46	10.95074 AU	max. Earth dist.	4000 Apr 28 01:06	9°♄00'09	10.52112 AU
morning rise	3994 Mar 04 18:04	28°♄58'09		morning rise	4000 May 15 05:56	11°♄07'35	
	3994 Mar 13 17:22	0°♄			4000 Jun 18 13:28	15°♄	
retrograde	3994 Jun 14 16:57	6°♄08'16		retrograde	4000 Aug 29 04:45	18°♄58'03	
opposition	3994 Aug 24 08:41	2°♄48'22	0°-59'-46	opposition	4000 Nov 06 22:33	15°♄31'37	-2°-41'-9
min. Earth dist.	3994 Aug 24 10:32	2°♄48'01	8.93399 AU	min. Earth dist.	4000 Nov 06 21:37	15°♄31'48	8.47484 AU
	3994 Oct 08 07:47	30°♄			4000 Nov 13 16:25	15°♄	
direct	3994 Nov 02 12:52	29°♄29'11		direct	4001 Jan 13 12:51	12°♄09'43	
	3994 Nov 27 09:39	0°♄			4001 Mar 12 08:42	15°♄	
evening set	3995 Feb 11 00:05	6°♄34'45		evening set	4001 Apr 24 02:20	19°♄42'05	
conjunction	3995 Feb 27 16:11	8°♄33'37	-1°00'-51	conjunction	4001 May 11 06:53	21°♄50'36	-2°-8'-23
minimum elong	3995 Feb 27 16:09	8°♄33'36	1°00'52	minimum elong	4001 May 11 06:55	21°♄50'36	2°08'24
max. Earth dist.	3995 Feb 27 13:24	8°♄32'47	10.91246 AU	max. Earth dist.	4001 May 11 07:54	21°♄50'55	10.42661 AU
morning rise	3995 Mar 16 09:45	10°♄32'56		morning rise	4001 May 28 16:03	24°♄00'32	
retrograde	3995 Jun 27 01:59	17°♄47'50			4001 Jul 25 02:19	0°♄	
opposition	3995 Sep 05 18:31	14°♄26'59	-1°-28'-45	retrograde	4001 Sep 11 23:34	1°♄58'02	
min. Earth dist.	3995 Sep 05 20:32	14°♄26'36	8.88737 AU		4001 Oct 31 20:51	30°♄	
direct	3995 Nov 14 13:29	11°♄07'46		opposition	4001 Nov 20 07:31	28°♄30'43	-2°-34'-20
evening set	3996 Feb 22 18:05	18°♄15'06		min. Earth dist.	4001 Nov 20 06:13	28°♄30'58	8.38210 AU
				direct	4002 Jan 26 13:18	25°♄07'52	



	4002 Apr 13 23:56	0°♊		evening set	4008 Jul 31 07:30	25°♎24'27	
evening set	4002 May 07 13:00	2°♊47'05					
conjunction	4002 May 24 22:06	4°♊58'06	-1°-59'-20	conjunction	4008 Aug 18 10:20	27°♎43'35	0°37'08
minimum elong	4002 May 24 22:08	4°♊58'07	1°59'22	minimum elong	4008 Aug 18 10:18	27°♎43'34	0°37'07
max. Earth dist.	4002 May 25 00:34	4°♊58'53	10.33710 AU	max. Earth dist.	4008 Aug 18 12:02	27°♎44'08	10.12265 AU
morning rise	4002 Jun 11 11:35	7°♊10'32		morning rise	4008 Sep 05 12:22	0°♐02'26	
retrograde	4002 Sep 25 23:58	15°♊14'03		retrograde	4008 Sep 05 04:38	0°♐	
opposition	4002 Dec 03 20:54	11°♊46'02	-2°-19'-14	opposition	4008 Dec 18 10:38	8°♐06'47	
min. Earth dist.	4002 Dec 03 18:35	11°♊46'29	8.29675 AU	opposition	4009 Feb 23 05:36	4°♐39'54	1°04'38
direct	4003 Feb 08 19:50	8°♊22'12		min. Earth dist.	4009 Feb 23 03:47	4°♐40'16	8.13860 AU
evening set	4003 May 21 08:09	16°♊08'10		direct	4009 May 01 17:28	1°♐11'12	
				evening set	4009 Aug 15 03:45	9°♐19'53	
conjunction	4003 Jun 07 22:04	18°♊21'41	-1°-43'-45	conjunction	4009 Sep 02 05:02	11°♐38'00	1°06'01
minimum elong	4003 Jun 07 22:07	18°♊21'42	1°43'46	minimum elong	4009 Sep 02 04:59	11°♐37'59	1°06'01
max. Earth dist.	4003 Jun 08 01:49	18°♊22'52	10.25745 AU	max. Earth dist.	4009 Sep 02 06:58	11°♐38'37	10.15951 AU
morning rise	4003 Jun 25 15:55	20°♊36'28		morning rise	4009 Sep 20 04:16	13°♐55'27	
retrograde	4003 Oct 10 04:02	28°♊44'36		retrograde	4010 Jan 01 08:45	21°♐54'21	
opposition	4003 Dec 17 14:04	25°♊16'06	-1°-56'-12	opposition	4010 Mar 09 02:02	18°♐28'23	1°38'10
min. Earth dist.	4003 Dec 17 10:53	25°♊16'44	8.22340 AU	min. Earth dist.	4010 Mar 08 23:55	18°♐28'49	8.18626 AU
direct	4004 Feb 22 08:48	21°♊51'13		direct	4010 May 15 23:25	14°♐59'37	
evening set	4004 Jun 03 11:40	29°♊43'35		evening set	4010 Aug 29 20:23	23°♐06'45	
	4004 Jun 05 15:52	0°♋					
conjunction	4004 Jun 21 06:11	1°♋59'21	-1°-22'-10	conjunction	4010 Sep 16 18:54	25°♐23'11	1°30'51
minimum elong	4004 Jun 21 06:14	1°♋59'22	1°22'12	minimum elong	4010 Sep 16 18:51	25°♐23'10	1°30'51
max. Earth dist.	4004 Jun 21 10:27	2°♋00'43	10.19195 AU	max. Earth dist.	4010 Sep 16 21:00	25°♐23'51	10.21679 AU
morning rise	4004 Jul 09 04:01	4°♋16'12		morning rise	4010 Oct 04 14:18	27°♐38'40	
retrograde	4004 Oct 23 11:19	12°♋27'07			4010 Oct 24 02:36	0°♌	
opposition	4004 Dec 30 10:08	8°♋58'25	-1°-26'-14	retrograde	4011 Jan 15 01:30	5°♌30'59	
min. Earth dist.	4004 Dec 30 06:42	8°♋59'07	8.16603 AU	opposition	4011 Mar 22 19:20	2°♌06'05	2°05'40
direct	4005 Mar 07 02:22	5°♋32'29		min. Earth dist.	4011 Mar 22 17:38	2°♌06'26	8.25284 AU
evening set	4005 Jun 17 22:16	13°♋30'30		direct	4011 Apr 19 18:43	30°♌	
					4011 May 30 03:28	28°♐37'29	
conjunction	4005 Jul 05 20:42	15°♋48'06	0°-55'-39	evening set	4011 Jul 09 05:27	0°♌	
minimum elong	4005 Jul 05 20:44	15°♋48'07	0°55'41		4011 Sep 13 07:05	6°♌41'18	
max. Earth dist.	4005 Jul 06 00:29	15°♋49'19	10.14399 AU	conjunction	4011 Oct 01 01:55	8°♌55'35	1°50'17
morning rise	4005 Jul 23 21:41	18°♋06'32		minimum elong	4011 Oct 01 01:52	8°♌55'34	1°50'17
retrograde	4005 Nov 06 19:57	26°♋18'21		max. Earth dist.	4011 Oct 01 03:27	8°♌56'04	10.29109 AU
opposition	4006 Jan 13 08:25	22°♋49'41	0°-50'-55	morning rise	4011 Oct 18 16:54	11°♌08'43	
min. Earth dist.	4006 Jan 13 05:33	22°♋50'17	8.12743 AU	retrograde	4012 Jan 28 10:54	18°♌53'44	
direct	4006 Mar 21 00:57	19°♋22'45		opposition	4012 Apr 04 08:57	15°♌29'59	2°25'46
evening set	4006 Jul 02 14:12	27°♋25'27		min. Earth dist.	4012 Apr 04 08:06	15°♌30'09	8.33432 AU
				direct	4012 Jun 12 05:18	12°♌01'48	
conjunction	4006 Jul 20 15:30	29°♋44'17	0°-25'-42	evening set	4012 Sep 26 09:49	20°♌00'42	
minimum elong	4006 Jul 20 15:32	29°♋44'18	0°25'44				
max. Earth dist.	4006 Jul 20 18:21	29°♋45'12	10.11559 AU	conjunction	4012 Oct 14 00:27	22°♌12'34	2°03'28
	4006 Jul 22 16:12	0°♍		minimum elong	4012 Oct 14 00:25	22°♌12'33	2°03'29
morning rise	4006 Aug 07 18:26	2°♍03'38		max. Earth dist.	4012 Oct 14 01:02	22°♌12'45	10.37800 AU
retrograde	4006 Nov 21 03:58	10°♍14'36		morning rise	4012 Oct 31 10:55	24°♌23'10	
opposition	4007 Jan 27 07:48	6°♍46'17	0°-12'-21		4012 Dec 23 13:14	0°♎	
min. Earth dist.	4007 Jan 27 05:43	6°♍46'43	8.10914 AU	retrograde	4013 Feb 09 13:36	2°♎00'38	
direct	4007 Apr 04 04:09	3°♍18'31			4013 Mar 31 00:09	30°♎	
asc. node	4007 May 26 00:54	5°♍39'30		opposition	4013 Apr 17 18:11	28°♌38'01	2°37'46
evening set	4007 Jul 17 10:04	11°♍24'48		min. Earth dist.	4013 Apr 17 18:12	28°♌38'01	8.42595 AU
				direct	4013 Jun 26 02:18	25°♌10'29	
conjunction	4007 Aug 04 12:54	13°♍44'10	0°05'57		4013 Sep 13 18:01	0°♎	
minimum elong	4007 Aug 04 12:54	13°♍44'10	0°05'56	evening set	4013 Oct 10 03:26	3°♎03'14	
behind sun begin	4007 Aug 04 05:54	13°♍41'56					
behind sun end	4007 Aug 04 19:53	13°♍46'24		conjunction	4013 Oct 27 13:54	5°♎12'38	2°10'02
max. Earth dist.	4007 Aug 04 14:57	13°♍44'48	10.10803 AU	minimum elong	4013 Oct 27 13:54	5°♎12'38	2°10'03
	4007 Aug 14 08:19	15°♍		max. Earth dist.	4013 Oct 27 13:21	5°♎12'28	10.47271 AU
morning rise	4007 Aug 22 16:13	16°♍03'41		morning rise	4013 Nov 13 20:11	7°♎20'43	
retrograde	4007 Dec 05 08:50	24°♍12'07		retrograde	4014 Feb 22 09:53	14°♎50'42	
opposition	4008 Feb 10 07:07	20°♍44'25	0°27'00	opposition	4014 Apr 30 22:36	11°♎29'09	2°41'31
min. Earth dist.	4008 Feb 10 05:26	20°♍44'46	8.11257 AU	min. Earth dist.	4014 Apr 30 22:53	11°♎29'05	8.52276 AU
direct	4008 Apr 17 10:41	17°♍16'03		direct	4014 Jul 09 17:49	8°♎02'27	



	4014 Oct 16 17:53	15°♍		conjunction	4021 Jan 19 09:14	29°♊19'40	0°27'16
evening set	4014 Oct 23 11:24	15°♍48'14		minimum elong	4021 Jan 19 09:15	29°♊19'40	0°27'16
				max. Earth dist.	4021 Jan 19 07:36	29°♊19'11	10.97984 AU
conjunction	4014 Nov 09 18:08	17°♍55'16	2°10'02		4021 Jan 25 01:02	0°♊	
minimum elong	4014 Nov 09 18:08	17°♍55'16	2°10'03	morning rise	4021 Feb 05 01:31	1°♊17'45	
max. Earth dist.	4014 Nov 09 17:08	17°♍54'58	10.57020 AU	retrograde	4021 May 16 15:09	8°♊20'49	
morning rise	4014 Nov 26 20:39	20°♍01'02		opposition	4021 Jul 25 19:43	5°♊02'45	0°17'30
retrograde	4015 Mar 06 23:45	27°♍23'58		min. Earth dist.	4021 Jul 25 21:09	5°♊02'29	8.98849 AU
opposition	4015 May 13 22:20	24°♍03'23	2°37'23	direct	4021 Oct 04 15:32	1°♊43'09	
min. Earth dist.	4015 May 13 22:30	24°♍03'21	8.61969 AU	evening set	4022 Jan 14 04:49	8°♊49'06	
direct	4015 Jul 23 03:57	20°♍37'41					
evening set	4015 Nov 05 09:59	28°♍16'08		conjunction	4022 Jan 30 21:33	10°♊47'11	0°01'11
	4015 Nov 19 16:44	0°♊		minimum elong	4022 Jan 30 21:34	10°♊47'12	0°01'11
				behind sun begin	4022 Jan 30 14:35	10°♊45'09	
conjunction	4015 Nov 22 13:25	0°♊21'00	2°03'53	behind sun end	4022 Jan 31 04:33	10°♊49'14	
minimum elong	4015 Nov 22 13:26	0°♊21'00	2°03'53	max. Earth dist.	4022 Jan 30 19:15	10°♊46'34	10.99231 AU
max. Earth dist.	4015 Nov 22 12:40	0°♊20'46	10.66558 AU	morning rise	4022 Feb 16 13:49	12°♊45'10	
morning rise	4015 Dec 09 12:39	2°♊24'38		desc. node	4022 Feb 16 05:09	12°♊42'39	
retrograde	4016 Mar 18 10:17	9°♊41'19			4022 Mar 08 17:09	15°♊	
opposition	4016 May 25 17:40	6°♊21'36	2°26'03	retrograde	4022 May 28 15:25	19°♊49'36	
min. Earth dist.	4016 May 25 17:59	6°♊21'32	8.71220 AU	opposition	4022 Aug 07 01:39	16°♊31'13	0°-14'-38
direct	4016 Aug 04 07:09	2°♊57'00		min. Earth dist.	4022 Aug 07 03:43	16°♊30'50	8.99128 AU
evening set	4016 Nov 16 23:51	10°♊28'09			4022 Aug 28 09:50	15°♊	
				direct	4022 Oct 16 15:31	13°♊12'11	
conjunction	4016 Dec 04 00:28	12°♊31'08	1°52'12		4022 Dec 03 05:31	15°♊	
minimum elong	4016 Dec 04 00:30	12°♊31'08	1°52'12	evening set	4023 Jan 25 17:33	20°♊16'35	
max. Earth dist.	4016 Dec 03 23:40	12°♊30'53	10.75460 AU				
morning rise	4016 Dec 20 21:07	14°♊32'58		conjunction	4023 Feb 11 09:39	22°♊14'36	0°-25'-1
retrograde	4017 Mar 30 15:49	21°♊44'21		minimum elong	4023 Feb 11 09:38	22°♊14'36	0°25'01
opposition	4017 Jun 07 09:03	18°♊25'22	2°08'27	max. Earth dist.	4023 Feb 11 06:50	22°♊13'47	10.98540 AU
min. Earth dist.	4017 Jun 07 10:13	18°♊25'09	8.79637 AU	morning rise	4023 Feb 28 02:12	24°♊12'46	
direct	4017 Aug 17 02:55	15°♊01'53			4023 Apr 29 21:38	0°♊	
evening set	4017 Nov 29 05:57	22°♊26'11		retrograde	4023 Jun 09 16:32	1°♊20'02	
					4023 Jul 21 15:24	30°♊	
conjunction	4017 Dec 16 04:09	24°♊27'33	1°35'47	opposition	4023 Aug 19 08:23	28°♊01'04	0°-46'-16
minimum elong	4017 Dec 16 04:11	24°♊27'34	1°35'46	min. Earth dist.	4023 Aug 19 10:27	28°♊00'41	8.97480 AU
max. Earth dist.	4017 Dec 16 02:19	24°♊27'00	10.83348 AU	direct	4023 Oct 28 16:15	24°♊42'24	
morning rise	4018 Jan 01 23:03	26°♊27'59			4024 Jan 21 14:35	0°♊	
	4018 Feb 03 07:30	0°♊		evening set	4024 Feb 06 06:59	1°♊46'32	
retrograde	4018 Apr 11 16:24	3°♊35'14					
opposition	4018 Jun 19 20:58	0°♊16'48	1°45'40	conjunction	4024 Feb 22 22:57	3°♊44'49	0°-50'-14
min. Earth dist.	4018 Jun 19 22:51	0°♊16'27	8.86865 AU	minimum elong	4024 Feb 22 22:55	3°♊44'48	0°50'15
	4018 Jun 23 14:19	30°♊		max. Earth dist.	4024 Feb 22 20:56	3°♊44'13	10.95925 AU
direct	4018 Aug 29 18:40	26°♊54'25		morning rise	4024 Mar 10 16:01	5°♊43'27	
	4018 Nov 01 11:41	0°♊		retrograde	4024 Jun 20 23:16	12°♊54'52	
evening set	4018 Dec 11 05:44	4°♊12'36		opposition	4024 Aug 30 16:30	9°♊35'06	-1°-16'-13
				min. Earth dist.	4024 Aug 30 17:40	9°♊34'53	8.93944 AU
conjunction	4018 Dec 28 01:57	6°♊12'41	1°15'32	direct	4024 Nov 08 16:56	6°♊16'36	
minimum elong	4018 Dec 28 02:00	6°♊12'41	1°15'31	evening set	4025 Feb 16 22:51	13°♊21'45	
max. Earth dist.	4018 Dec 27 23:19	6°♊11'53	10.89892 AU				
morning rise	4019 Jan 13 19:39	8°♊12'00		conjunction	4025 Mar 05 15:05	15°♊20'38	-1°-13'-34
retrograde	4019 Apr 23 16:37	15°♊16'27		minimum elong	4025 Mar 05 15:03	15°♊20'38	1°13'36
opposition	4019 Jul 02 06:05	11°♊58'23	1°18'48	max. Earth dist.	4025 Mar 05 13:44	15°♊20'14	10.91448 AU
min. Earth dist.	4019 Jul 02 07:52	11°♊58'03	8.92607 AU	morning rise	4025 Mar 22 09:00	17°♊20'06	
direct	4019 Sep 11 06:28	8°♊37'02		retrograde	4025 Jul 03 09:40	24°♊36'47	
evening set	4019 Dec 23 00:26	15°♊50'01		opposition	4025 Sep 12 02:38	21°♊16'03	-1°-43'-21
				min. Earth dist.	4025 Sep 12 03:32	21°♊15'53	8.88602 AU
conjunction	4020 Jan 08 19:14	17°♊49'08	0°52'22	direct	4025 Nov 20 16:21	17°♊57'27	
minimum elong	4020 Jan 08 19:16	17°♊49'08	0°52'22	evening set	4026 Feb 28 18:26	25°♊05'00	
max. Earth dist.	4020 Jan 08 16:59	17°♊48'28	10.94833 AU				
morning rise	4020 Jan 25 12:02	19°♊47'40		conjunction	4026 Mar 17 11:16	27°♊04'49	-1°-34'-6
retrograde	4020 May 04 15:28	26°♊50'43		minimum elong	4026 Mar 17 11:13	27°♊04'48	1°34'07
opposition	4020 Jul 13 13:25	23°♊32'45	0°49'02	max. Earth dist.	4026 Mar 17 09:22	27°♊04'15	10.85222 AU
min. Earth dist.	4020 Jul 13 14:37	23°♊32'32	8.96651 AU	morning rise	4026 Apr 03 06:38	29°♊05'26	
direct	4020 Sep 22 12:23	20°♊12'22			4026 Apr 11 02:07	0°♊	
evening set	4021 Jan 02 15:30	27°♊21'12		retrograde	4026 Jul 16 00:41	6°♊28'28	
				opposition	4026 Sep 24 15:59	3°♊06'38	-2°-6'-31



min. Earth dist.	4026 Sep 24 17:18	3°♊06'23	8.81586 AU	min. Earth dist.	4032 Dec 10 15:08	19°♊17'59	8.25455 AU
	4026 Nov 17 06:13	30°♊08'		direct	4033 Feb 15 13:05	15°♊53'06	
direct	4026 Dec 02 19:21	29°♊47'42		evening set	4033 May 28 08:09	23°♊42'21	
	4026 Dec 18 06:11	0°♊					
evening set	4027 Mar 12 18:46	6°♊58'56		conjunction	4033 Jun 15 00:25	25°♊57'05	-1°-32'-49
				minimum elong	4033 Jun 15 00:28	25°♊57'06	1°32'50
conjunction	4027 Mar 29 12:48	9°♊00'03	-1°-50'-52	max. Earth dist.	4033 Jun 15 01:43	25°♊57'30	10.21610 AU
minimum elong	4027 Mar 29 12:46	9°♊00'02	1°50'52	morning rise	4033 Jul 02 20:35	28°♊13'02	
max. Earth dist.	4027 Mar 29 10:15	8°♊59'16	10.77429 AU		4033 Jul 17 10:24	0°♊	
morning rise	4027 Apr 15 10:14	11°♊02'11		retrograde	4033 Oct 17 05:37	6°♊22'49	
retrograde	4027 Jul 28 21:26	18°♊32'30		opposition	4033 Dec 24 10:27	2°♊53'49	-1°-40'-53
opposition	4027 Oct 07 09:04	15°♊09'27	-2°-24'-36	min. Earth dist.	4033 Dec 24 09:08	2°♊54'05	8.18311 AU
min. Earth dist.	4027 Oct 07 10:46	15°♊09'08	8.73143 AU		4034 Feb 04 23:43	30°♊08'	
direct	4027 Dec 15 01:22	11°♊49'59		direct	4034 Mar 01 04:20	29°♊27'54	
evening set	4028 Mar 24 01:15	19°♊06'04			4034 Mar 25 04:53	0°♊	
				evening set	4034 Jun 11 14:59	7°♊23'30	
conjunction	4028 Apr 09 21:25	21°♊08'53	-2°-2'-59				
minimum elong	4028 Apr 09 21:24	21°♊08'52	2°02'59	conjunction	4034 Jun 29 11:42	9°♊40'24	-1°-8'-27
max. Earth dist.	4028 Apr 09 19:34	21°♊08'19	10.68400 AU	minimum elong	4034 Jun 29 11:45	9°♊40'25	1°08'29
morning rise	4028 Apr 26 21:25	23°♊12'53		max. Earth dist.	4034 Jun 29 14:05	9°♊41'10	10.15379 AU
	4028 Jul 08 20:46	0°♊		morning rise	4034 Jul 17 11:28	11°♊58'16	
retrograde	4028 Aug 09 23:45	0°♊50'58		retrograde	4034 Oct 31 13:27	20°♊10'14	
	4028 Sep 11 12:28	30°♊08'		opposition	4035 Jan 07 07:37	16°♊41'01	-1°-7'-50
opposition	4028 Oct 19 06:11	27°♊26'39	-2°-36'-31	min. Earth dist.	4035 Jan 07 05:28	16°♊41'28	8.13031 AU
min. Earth dist.	4028 Oct 19 07:17	27°♊26'27	8.63681 AU	direct	4035 Mar 15 00:51	13°♊14'01	
direct	4028 Dec 26 12:13	24°♊06'26		evening set	4035 Jun 26 04:24	21°♊15'04	
	4029 Mar 24 04:29	0°♊					
evening set	4029 Apr 05 14:52	1°♊28'19		conjunction	4035 Jul 14 04:44	23°♊33'36	0°-39'-53
				minimum elong	4035 Jul 14 04:46	23°♊33'36	0°39'55
conjunction	4029 Apr 22 13:59	3°♊33'11	-2°-9'-39	max. Earth dist.	4035 Jul 14 08:02	23°♊34'39	10.11177 AU
minimum elong	4029 Apr 22 13:59	3°♊33'11	2°09'40	morning rise	4035 Aug 01 07:00	25°♊52'47	
max. Earth dist.	4029 Apr 22 13:17	3°♊32'58	10.58588 AU		4035 Sep 05 10:53	0°♊	
morning rise	4029 May 09 17:07	5°♊39'20		retrograde	4035 Nov 14 21:53	4°♊04'58	
retrograde	4029 Aug 23 09:34	13°♊25'19		opposition	4036 Jan 21 06:34	0°♊35'53	0°-30'-28
opposition	4029 Nov 01 07:51	9°♊59'44	-2°-41'-21	min. Earth dist.	4036 Jan 21 03:46	0°♊36'27	8.09924 AU
min. Earth dist.	4029 Nov 01 07:56	9°♊59'43	8.53670 AU		4036 Jan 28 14:06	30°♊08'	
direct	4030 Jan 08 04:03	6°♊38'34		direct	4036 Mar 28 01:56	27°♊07'56	
evening set	4030 Apr 18 12:23	14°♊06'55			4036 May 24 15:06	0°♊	
	4030 Apr 25 16:54	15°♊		evening set	4036 Jul 09 22:53	5°♊13'17	
conjunction	4030 May 05 15:02	16°♊14'06	-2°-10'-13	conjunction	4036 Jul 28 01:26	7°♊32'43	0°-8'-50
minimum elong	4030 May 05 15:03	16°♊14'06	2°10'14	minimum elong	4036 Jul 28 01:26	7°♊32'43	0°08'51
max. Earth dist.	4030 May 05 15:12	16°♊14'09	10.48489 AU	behind sun begin	4036 Jul 27 19:09	7°♊30'43	
morning rise	4030 May 22 21:57	18°♊22'39		behind sun end	4036 Jul 28 07:43	7°♊34'44	
retrograde	4030 Sep 06 02:11	26°♊16'11		max. Earth dist.	4036 Jul 28 04:54	7°♊33'49	10.09247 AU
opposition	4030 Nov 14 14:12	22°♊49'25	-2°-38'-20	morning rise	4036 Aug 15 04:42	9°♊52'27	
min. Earth dist.	4030 Nov 14 13:27	22°♊49'34	8.43618 AU		4036 Sep 29 09:54	15°♊	
direct	4031 Jan 20 23:56	19°♊27'10		asc. node	4036 Nov 10 08:48	17°♊45'19	
evening set	4031 May 01 18:25	27°♊02'27		retrograde	4036 Nov 28 04:56	18°♊02'56	
					4037 Jan 29 01:06	15°♊08'	
conjunction	4031 May 19 01:14	29°♊12'07	-2°-4'-15	opposition	4037 Feb 03 06:09	14°♊34'18	0°08'51
minimum elong	4031 May 19 01:16	29°♊12'08	2°04'17	min. Earth dist.	4037 Feb 03 03:21	14°♊34'52	8.09185 AU
max. Earth dist.	4031 May 19 01:30	29°♊12'12	10.38626 AU	direct	4037 Apr 11 06:14	11°♊05'38	
	4031 May 25 09:26	0°♊			4037 Jun 18 14:58	15°♊	
morning rise	4031 Jun 05 12:32	1°♊23'13		evening set	4037 Jul 24 20:00	19°♊13'47	
retrograde	4031 Sep 19 23:34	9°♊23'29					
opposition	4031 Nov 28 01:02	5°♊55'44	-2°-27'-6	conjunction	4037 Aug 11 23:09	21°♊33'20	0°22'52
min. Earth dist.	4031 Nov 28 00:12	5°♊55'54	8.34047 AU	minimum elong	4037 Aug 11 23:08	21°♊33'19	0°22'52
direct	4032 Feb 03 02:46	2°♊32'16		max. Earth dist.	4037 Aug 12 02:20	21°♊34'21	10.09723 AU
evening set	4032 May 14 09:04	10°♊14'38		morning rise	4037 Aug 30 01:54	23°♊52'46	
					4037 Oct 25 19:59	0°♊	
conjunction	4032 May 31 20:33	12°♊26'54	-1°-51'-41	retrograde	4037 Dec 12 09:28	1°♊59'48	
minimum elong	4032 May 31 20:36	12°♊26'55	1°51'43		4038 Jan 29 18:25	30°♊08'	
max. Earth dist.	4032 May 31 21:08	12°♊27'05	10.29507 AU	opposition	4038 Feb 17 05:24	28°♊31'55	0°47'38
morning rise	4032 Jun 18 12:26	14°♊40'32		min. Earth dist.	4038 Feb 17 02:57	28°♊32'25	8.10878 AU
retrograde	4032 Oct 03 00:34	22°♊46'19		direct	4038 Apr 25 12:00	25°♊02'48	
opposition	4032 Dec 10 16:01	19°♊17'48	-2°-7'-44		4038 Jul 12 23:35	0°♊	



evening set	4038 Aug 08 17:06	3°♏12'01		max. Earth dist.	4044 Nov 16 04:22	25°♍01'22	10.62635 AU
				morning rise	4044 Dec 03 05:23	27°♍06'04	
conjunction	4038 Aug 26 19:19	5°♏30'52	0°53'04		4044 Dec 28 15:18	0°♏	
minimum elong	4038 Aug 26 19:17	5°♏30'52	0°53'03	retrograde	4045 Mar 13 06:26	4°♏25'46	
max. Earth dist.	4038 Aug 26 21:55	5°♏31'42	10.12587 AU	opposition	4045 May 20 09:03	1°♏06'05	2°31'47
morning rise	4038 Sep 13 20:05	7°♏49'14		min. Earth dist.	4045 May 20 09:40	1°♏05'58	8.67576 AU
retrograde	4038 Dec 26 09:56	15°♏51'18			4045 Jun 03 22:55	30°♍	
opposition	4039 Mar 03 03:06	12°♏24'24	1°23'20	direct	4045 Jul 29 17:37	27°♍41'24	
min. Earth dist.	4039 Mar 03 01:11	12°♏24'48	8.14901 AU		4045 Sep 21 20:38	0°♏	
direct	4039 May 09 19:04	8°♏55'10		evening set	4045 Nov 11 18:16	5°♏16'04	
evening set	4039 Aug 23 11:57	17°♏03'41					
				conjunction	4045 Nov 28 20:00	7°♏19'53	1°57'56
conjunction	4039 Sep 10 11:50	19°♏21'06	1°19'57	minimum elong	4045 Nov 28 20:02	7°♏19'53	1°57'56
minimum elong	4039 Sep 10 11:47	19°♏21'05	1°19'57	max. Earth dist.	4045 Nov 28 18:32	7°♏19'26	10.72082 AU
max. Earth dist.	4039 Sep 10 13:40	19°♏21'41	10.17664 AU	morning rise	4045 Dec 15 17:57	9°♏22'31	
morning rise	4039 Sep 28 09:20	21°♏37'44		retrograde	4046 Mar 25 13:29	16°♏36'20	
retrograde	4040 Jan 09 04:25	29°♏33'35		opposition	4046 Jun 02 02:27	13°♏17'28	2°16'52
opposition	4040 Mar 15 22:03	26°♏07'52	1°53'49	min. Earth dist.	4046 Jun 02 03:26	13°♏17'17	8.76538 AU
min. Earth dist.	4040 Mar 15 20:17	26°♏08'14	8.21006 AU	direct	4046 Aug 11 18:10	9°♏53'53	
direct	4040 May 23 01:25	22°♏38'51		evening set	4046 Nov 24 04:23	17°♏21'26	
	4040 Aug 31 00:33	0°♎					
evening set	4040 Sep 06 01:51	0°♎44'51		conjunction	4046 Dec 11 03:39	19°♏23'30	1°43'32
				minimum elong	4046 Dec 11 03:41	19°♏23'31	1°43'32
conjunction	4040 Sep 23 22:25	3°♎00'16	1°42'00	max. Earth dist.	4046 Dec 11 01:43	19°♏22'55	10.80480 AU
minimum elong	4040 Sep 23 22:22	3°♎00'15	1°42'00	morning rise	4046 Dec 27 23:23	21°♏24'33	
max. Earth dist.	4040 Sep 24 00:01	3°♎00'47	10.24650 AU	retrograde	4047 Apr 06 17:30	28°♏33'42	
morning rise	4040 Oct 11 15:44	5°♎14'41		opposition	4047 Jun 14 16:18	25°♏15'26	1°56'16
retrograde	4041 Jan 21 16:38	13°♎03'32		min. Earth dist.	4047 Jun 14 17:36	25°♏15'12	8.84223 AU
opposition	4041 Mar 29 13:44	9°♎39'06	2°17'26	direct	4047 Aug 24 13:11	21°♏52'58	
min. Earth dist.	4041 Mar 29 11:45	9°♎39'30	8.28826 AU	evening set	4047 Dec 06 07:25	29°♏14'05	
direct	4041 Jun 06 05:19	6°♎10'36			4047 Dec 12 18:48	0°♎	
evening set	4041 Sep 20 08:35	14°♎12'20					
				conjunction	4047 Dec 23 04:38	1°♎14'45	1°24'52
conjunction	4041 Oct 08 01:16	16°♎25'27	1°58'07	minimum elong	4047 Dec 23 04:41	1°♎14'45	1°24'52
minimum elong	4041 Oct 08 01:14	16°♎25'26	1°58'08	max. Earth dist.	4047 Dec 23 02:30	1°♎14'06	10.87431 AU
max. Earth dist.	4041 Oct 08 03:03	16°♎26'01	10.33137 AU	morning rise	4048 Jan 08 22:42	3°♎14'33	
morning rise	4041 Oct 25 14:00	18°♎37'21		retrograde	4048 Apr 17 20:15	10°♎20'26	
retrograde	4042 Feb 03 23:50	26°♎18'46		opposition	4048 Jun 26 03:19	7°♎02'34	1°31'04
opposition	4042 Apr 12 01:21	22°♎55'37	2°33'10	min. Earth dist.	4048 Jun 26 05:33	7°♎02'09	8.90340 AU
min. Earth dist.	4042 Apr 11 23:24	22°♎56'01	8.37905 AU	direct	4048 Sep 05 01:48	3°♎41'06	
direct	4042 Jun 20 03:46	19°♎27'53		evening set	4048 Dec 17 04:58	10°♎56'41	
evening set	4042 Oct 04 07:02	27°♎23'58					
				conjunction	4049 Jan 03 00:27	12°♎56'17	1°02'52
conjunction	4042 Oct 21 19:39	29°♎34'36	2°07'43	minimum elong	4049 Jan 03 00:29	12°♎56'18	1°02'52
minimum elong	4042 Oct 21 19:38	29°♎34'36	2°07'44	max. Earth dist.	4049 Jan 02 21:14	12°♎55'20	10.92729 AU
max. Earth dist.	4042 Oct 21 21:24	29°♎35'09	10.42641 AU	morning rise	4049 Jan 19 17:33	14°♎55'14	
	4042 Oct 25 04:50	0°♍		retrograde	4049 Apr 29 18:41	21°♎59'10	
morning rise	4042 Nov 08 03:50	1°♍43'55		opposition	4049 Jul 08 12:02	18°♎41'26	1°02'25
retrograde	4043 Feb 17 00:54	9°♍17'44		min. Earth dist.	4049 Jul 08 15:12	18°♎40'51	8.94739 AU
opposition	4043 Apr 25 08:26	5°♍55'52	2°40'38	direct	4049 Sep 17 09:51	15°♎20'47	
min. Earth dist.	4043 Apr 25 07:11	5°♍56'06	8.47737 AU	evening set	4049 Dec 28 22:16	22°♎31'56	
direct	4043 Jul 03 21:17	2°♍29'03					
evening set	4043 Oct 17 20:18	10°♍18'28		conjunction	4050 Jan 14 16:24	24°♎30'45	0°38'28
				minimum elong	4050 Jan 14 16:25	24°♎30'46	0°38'29
conjunction	4043 Nov 04 04:52	12°♍26'39	2°10'40	max. Earth dist.	4050 Jan 14 12:12	24°♎29'31	10.96241 AU
minimum elong	4043 Nov 04 04:52	12°♍26'39	2°10'41	morning rise	4050 Jan 31 09:03	26°♎29'09	
max. Earth dist.	4043 Nov 04 05:58	12°♍26'59	10.52647 AU		4050 Mar 04 23:10	0°♌	
morning rise	4043 Nov 21 08:57	14°♍33'30		retrograde	4050 May 11 17:41	3°♌32'35	
	4043 Nov 25 00:47	15°♍		opposition	4050 Jul 20 19:17	0°♌14'41	0°31'29
retrograde	4044 Feb 29 18:33	21°♍59'57		min. Earth dist.	4050 Jul 20 22:34	0°♌14'04	8.97298 AU
opposition	4044 May 07 11:04	18°♍39'16	2°39'59		4050 Jul 24 02:27	30°♍	
min. Earth dist.	4044 May 07 10:59	18°♍39'17	8.57802 AU	direct	4050 Sep 29 16:48	26°♎54'41	
direct	4044 Jul 16 10:12	15°♍13'29			4050 Dec 02 05:20	0°♌	
evening set	4044 Oct 29 23:51	22°♍55'37		evening set	4051 Jan 09 12:45	4°♌02'29	
conjunction	4044 Nov 16 04:42	25°♍01'28	2°07'13	conjunction	4051 Jan 26 05:58	6°♌00'52	0°12'40
minimum elong	4044 Nov 16 04:43	25°♍01'28	2°07'14	minimum elong	4051 Jan 26 05:58	6°♌00'52	0°12'41



behind sun begin	4051 Jan 26 01:27	5° $\approx$ 59'32		direct	4056 Dec 09 04:10	6° $\Upsilon$ 52'51	
behind sun end	4051 Jan 26 10:29	6° $\approx$ 02'11		evening set	4057 Mar 19 03:06	14° $\Upsilon$ 07'37	
max. Earth dist.	4051 Jan 26 02:15	5° $\approx$ 59'46	10.97861 AU				
morning rise	4051 Feb 11 22:19	7° $\approx$ 59'01		conjunction	4057 Apr 04 22:25	16° $\Upsilon$ 09'56	-1°-58'-27
	4051 May 15 13:31	15° $\approx$		minimum elong	4057 Apr 04 22:24	16° $\Upsilon$ 09'55	1°58'27
retrograde	4051 May 23 18:28	15° $\approx$ 03'21		max. Earth dist.	4057 Apr 04 21:32	16° $\Upsilon$ 09'39	10.70095 AU
	4051 May 31 23:32	15° $\approx$		morning rise	4057 Apr 21 21:12	18° $\Upsilon$ 13'21	
desc. node	4051 Jul 26 05:19	12° $\approx$ 15'21		retrograde	4057 Aug 04 17:47	25° $\Upsilon$ 48'54	
opposition	4051 Aug 02 01:53	11° $\approx$ 44'59	0°00'-34	opposition	4057 Oct 14 01:57	22° $\Upsilon$ 24'30	-2°-32'-22
min. Earth dist.	4051 Aug 02 04:25	11° $\approx$ 44'31	8.97945 AU	min. Earth dist.	4057 Oct 14 02:01	22° $\Upsilon$ 24'30	8.65701 AU
direct	4051 Oct 11 19:27	8° $\approx$ 25'30		direct	4057 Dec 21 11:58	19° $\Upsilon$ 04'04	
	4052 Jan 16 14:05	15° $\approx$		evening set	4058 Mar 31 13:56	26° $\Upsilon$ 24'11	
evening set	4052 Jan 21 01:59	15° $\approx$ 31'09					
				conjunction	4058 Apr 17 11:36	28° $\Upsilon$ 28'20	-2°-7'-33
conjunction	4052 Feb 06 18:34	17° $\approx$ 29'23	0°-13'-40	minimum elong	4058 Apr 17 11:35	28° $\Upsilon$ 28'20	2°07'34
minimum elong	4052 Feb 06 18:34	17° $\approx$ 29'23	0°13'41	max. Earth dist.	4058 Apr 17 10:43	28° $\Upsilon$ 28'04	10.60913 AU
behind sun begin	4052 Feb 06 14:40	17° $\approx$ 28'14			4058 Apr 29 22:06	0° $\delta$	
behind sun end	4052 Feb 06 22:28	17° $\approx$ 30'31		morning rise	4058 May 04 13:24	0° $\delta$ 33'46	
max. Earth dist.	4052 Feb 06 15:39	17° $\approx$ 28'32	10.97550 AU	retrograde	4058 Aug 18 00:25	8° $\delta$ 17'06	
morning rise	4052 Feb 23 10:55	19° $\approx$ 27'37		opposition	4058 Oct 27 02:12	4° $\delta$ 51'34	-2°-40'-19
retrograde	4052 Jun 03 20:07	26° $\approx$ 34'14		min. Earth dist.	4058 Oct 27 02:11	4° $\delta$ 51'34	8.56267 AU
opposition	4052 Aug 13 08:43	23° $\approx$ 15'11	0°-32'-38	direct	4059 Jan 03 01:54	1° $\delta$ 30'23	
min. Earth dist.	4052 Aug 13 10:56	23° $\approx$ 14'47	8.96683 AU	evening set	4059 Apr 13 08:10	8° $\delta$ 56'35	
direct	4052 Oct 22 19:45	19° $\approx$ 55'59					
evening set	4053 Jan 31 15:24	27° $\approx$ 00'52		conjunction	4059 Apr 30 09:06	11° $\delta$ 02'55	-2°-10'-47
				minimum elong	4059 Apr 30 09:07	11° $\delta$ 02'55	2°10'48
conjunction	4053 Feb 17 07:32	28° $\approx$ 59'14	0°-39'-26	max. Earth dist.	4059 Apr 30 09:02	11° $\delta$ 02'53	10.51319 AU
minimum elong	4053 Feb 17 07:31	28° $\approx$ 59'14	0°39'28	morning rise	4059 May 17 14:31	13° $\delta$ 10'36	
max. Earth dist.	4053 Feb 17 04:27	28° $\approx$ 58'19	10.95338 AU		4059 Jun 01 23:09	15° $\delta$	
	4053 Feb 25 19:46	0° $\delta$		retrograde	4059 Aug 31 13:58	21° $\delta$ 01'36	
morning rise	4053 Mar 06 00:23	0° $\delta$ 57'51		opposition	4059 Nov 09 07:04	17° $\delta$ 35'01	-2°-40'-41
retrograde	4053 Jun 16 01:05	8° $\delta$ 08'06		min. Earth dist.	4059 Nov 09 06:33	17° $\delta$ 35'07	8.46636 AU
opposition	4053 Aug 25 16:36	4° $\delta$ 48'13	-1°-3'-31		4059 Dec 16 20:17	15° $\approx$ $\delta$	
min. Earth dist.	4053 Aug 25 19:09	4° $\delta$ 47'45	8.93564 AU	direct	4060 Jan 15 20:47	14° $\delta$ 12'57	
direct	4053 Nov 03 19:55	1° $\delta$ 29'07			4060 Feb 14 11:03	15° $\delta$	
evening set	4054 Feb 12 06:32	8° $\delta$ 34'33		evening set	4060 Apr 25 10:51	21° $\delta$ 45'50	
conjunction	4054 Feb 28 22:33	10° $\delta$ 33'23	-1°-3'-45	conjunction	4060 May 12 15:53	23° $\delta$ 54'34	-2°-7'-36
minimum elong	4054 Feb 28 22:31	10° $\delta$ 33'23	1°03'47	minimum elong	4060 May 12 15:55	23° $\delta$ 54'34	2°07'37
max. Earth dist.	4054 Feb 28 19:06	10° $\delta$ 32'21	10.91309 AU	max. Earth dist.	4060 May 12 17:21	23° $\delta$ 55'01	10.41773 AU
morning rise	4054 Mar 17 16:16	12° $\delta$ 32'44		morning rise	4060 May 30 01:21	26° $\delta$ 04'43	
retrograde	4054 Jun 28 08:11	19° $\delta$ 47'50			4060 Jul 03 10:15	0° $\Pi$	
opposition	4054 Sep 07 02:14	16° $\delta$ 26'57	-1°-32'-5	retrograde	4060 Sep 13 08:59	4° $\Pi$ 02'45	
min. Earth dist.	4054 Sep 07 04:42	16° $\delta$ 26'29	8.88700 AU	opposition	4060 Nov 21 16:20	0° $\Pi$ 35'16	-2°-32'-54
direct	4054 Nov 15 20:11	13° $\delta$ 07'46		min. Earth dist.	4060 Nov 21 14:47	0° $\Pi$ 35'34	8.37288 AU
evening set	4055 Feb 24 00:35	20° $\delta$ 15'07			4060 Nov 29 03:01	30° $\approx$ $\delta$	
				direct	4061 Jan 27 21:59	27° $\delta$ 12'15	
conjunction	4055 Mar 12 17:09	22° $\delta$ 14'46	-1°-25'-40		4061 Mar 25 22:50	0° $\Pi$	
minimum elong	4055 Mar 12 17:06	22° $\delta$ 14'45	1°25'41	evening set	4061 May 08 22:17	4° $\Pi$ 52'05	
max. Earth dist.	4055 Mar 12 14:40	22° $\delta$ 14'01	10.85610 AU				
morning rise	4055 Mar 29 12:00	24° $\delta$ 15'07		conjunction	4061 May 26 07:53	7° $\Pi$ 03'21	-1°-57'-47
	4055 May 27 00:58	0° $\Upsilon$		minimum elong	4061 May 26 07:55	7° $\Pi$ 03'22	1°57'48
retrograde	4055 Jul 10 21:09	1° $\Upsilon$ 36'16		max. Earth dist.	4061 May 26 10:40	7° $\Pi$ 04'14	10.32766 AU
	4055 Aug 25 23:06	30° $\approx$ $\delta$		morning rise	4061 Jun 12 21:41	9° $\Pi$ 16'00	
opposition	4055 Sep 19 14:38	28° $\delta$ 14'15	-1°-57'-11	retrograde	4061 Sep 27 09:44	17° $\Pi$ 20'02	
min. Earth dist.	4055 Sep 19 16:05	28° $\delta$ 13'58	8.82267 AU	opposition	4061 Dec 05 06:04	13° $\Pi$ 51'52	-2°-16'-51
direct	4055 Nov 28 00:06	24° $\delta$ 54'49		min. Earth dist.	4061 Dec 05 03:26	13° $\Pi$ 52'24	8.28717 AU
	4056 Feb 17 17:13	0° $\Upsilon$		direct	4062 Feb 10 05:00	10° $\Pi$ 27'52	
evening set	4056 Mar 06 22:57	2° $\Upsilon$ 05'17		evening set	4062 May 22 18:14	18° $\Pi$ 14'32	
conjunction	4056 Mar 23 16:38	4° $\Upsilon$ 06'07	-1°-44'-12	conjunction	4062 Jun 09 08:32	20° $\Pi$ 28'18	-1°-41'-27
minimum elong	4056 Mar 23 16:35	4° $\Upsilon$ 06'06	1°44'13	minimum elong	4062 Jun 09 08:35	20° $\Pi$ 28'19	1°41'29
max. Earth dist.	4056 Mar 23 15:27	4° $\Upsilon$ 05'45	10.78447 AU	max. Earth dist.	4062 Jun 09 11:59	20° $\Pi$ 29'24	10.24796 AU
morning rise	4056 Apr 09 13:06	6° $\Upsilon$ 07'50		morning rise	4062 Jun 27 02:45	22° $\Pi$ 43'19	
retrograde	4056 Jul 22 17:08	13° $\Upsilon$ 35'54			4062 Sep 10 02:37	0° $\delta$	
opposition	4056 Oct 01 06:22	10° $\Upsilon$ 12'41	-2°-17'-39	retrograde	4062 Oct 11 15:25	0° $\delta$ 51'56	
min. Earth dist.	4056 Oct 01 06:44	10° $\Upsilon$ 12'37	8.74497 AU		4062 Nov 12 07:03	30° $\approx$ $\Pi$	



opposition	4062 Dec 18 23:44	27° $\Pi$ 23'20	-1°-52'-58	opposition	4069 Mar 10 12:58	20° $\Pi$ 39'19	1°41'46
min. Earth dist.	4062 Dec 18 20:39	27° $\Pi$ 23'57	8.21411 AU	min. Earth dist.	4069 Mar 10 10:58	20° $\Pi$ 39'43	8.18947 AU
direct	4063 Feb 23 16:56	23° $\Pi$ 58'18		direct	4069 May 17 10:49	17° $\Pi$ 10'35	
	4063 May 21 18:35	0° $\mathfrak{E}$		evening set	4069 Aug 31 09:09	25° $\Pi$ 17'47	
evening set	4063 Jun 05 22:31	1° $\mathfrak{E}$ 51'23					
conjunction	4063 Jun 23 17:20	4° $\mathfrak{E}$ 07'24	-1°-19'-14	conjunction	4069 Sep 18 07:17	27° $\Pi$ 34'04	1°33'26
minimum elong	4063 Jun 23 17:23	4° $\mathfrak{E}$ 07'25	1°19'16	minimum elong	4069 Sep 18 07:14	27° $\Pi$ 34'03	1°33'26
max. Earth dist.	4063 Jun 23 20:52	4° $\mathfrak{E}$ 08'32	10.13684 AU	max. Earth dist.	4069 Sep 18 09:14	27° $\Pi$ 34'42	10.22060 AU
morning rise	4063 Jul 11 15:35	6° $\mathfrak{E}$ 24'30		morning rise	4069 Oct 06 02:15	29° $\Pi$ 49'25	
retrograde	4063 Oct 25 23:29	14° $\mathfrak{E}$ 35'50			4069 Oct 07 12:11	0° $\mathfrak{E}$	
opposition	4064 Jan 01 20:20	11° $\mathfrak{E}$ 07'05	-1°-22'-17	retrograde	4070 Jan 16 12:10	7° $\mathfrak{E}$ 41'24	
min. Earth dist.	4064 Jan 01 17:25	11° $\mathfrak{E}$ 07'40	8.15789 AU	opposition	4070 Mar 24 06:20	4° $\mathfrak{E}$ 16'40	2°08'26
direct	4064 Mar 08 11:52	7° $\mathfrak{E}$ 41'00		min. Earth dist.	4070 Mar 24 05:11	4° $\mathfrak{E}$ 16'54	8.25732 AU
evening set	4064 Jun 19 09:55	15° $\mathfrak{E}$ 39'47		direct	4070 May 31 15:28	0° $\mathfrak{E}$ 48'08	
				evening set	4070 Sep 14 19:22	8° $\mathfrak{E}$ 51'53	
conjunction	4064 Jul 07 08:37	17° $\mathfrak{E}$ 57'35	0°-52'-14	conjunction	4070 Oct 02 13:44	11° $\mathfrak{E}$ 06'00	1°52'08
minimum elong	4064 Jul 07 08:39	17° $\mathfrak{E}$ 57'36	0°52'16	minimum elong	4070 Oct 02 13:42	11° $\mathfrak{E}$ 05'59	1°52'09
max. Earth dist.	4064 Jul 07 11:47	17° $\mathfrak{E}$ 58'36	10.13684 AU	max. Earth dist.	4070 Oct 02 14:38	11° $\mathfrak{E}$ 06'17	10.29605 AU
morning rise	4064 Jul 25 09:58	20° $\mathfrak{E}$ 16'13		morning rise	4070 Oct 20 04:24	13° $\mathfrak{E}$ 18'58	
retrograde	4064 Nov 08 07:18	28° $\mathfrak{E}$ 28'19		retrograde	4071 Jan 29 21:34	21° $\mathfrak{E}$ 03'39	
opposition	4065 Jan 14 19:01	24° $\mathfrak{E}$ 59'40	0°-46'-28	opposition	4071 Apr 06 19:52	17° $\mathfrak{E}$ 40'04	2°27'35
min. Earth dist.	4065 Jan 14 16:33	25° $\mathfrak{E}$ 00'11	8.12143 AU	min. Earth dist.	4071 Apr 06 19:25	17° $\mathfrak{E}$ 40'09	8.33983 AU
direct	4065 Mar 22 12:28	21° $\mathfrak{E}$ 32'38		direct	4071 Jun 14 16:33	14° $\mathfrak{E}$ 11'59	
evening set	4065 Jul 04 02:36	29° $\mathfrak{E}$ 35'59		evening set	4071 Sep 28 21:40	22° $\mathfrak{E}$ 10'41	
	4065 Jul 07 06:23	0° $\mathfrak{E}$					
conjunction	4065 Jul 22 04:06	1° $\mathfrak{E}$ 54'57	0°-22'00	conjunction	4071 Oct 16 11:53	24° $\mathfrak{E}$ 22'23	2°04'31
minimum elong	4065 Jul 22 04:07	1° $\mathfrak{E}$ 54'58	0°22'01	minimum elong	4071 Oct 16 11:51	24° $\mathfrak{E}$ 22'23	2°04'32
max. Earth dist.	4065 Jul 22 06:59	1° $\mathfrak{E}$ 55'53	10.11102 AU	max. Earth dist.	4071 Oct 16 11:49	24° $\mathfrak{E}$ 22'22	10.38389 AU
morning rise	4065 Aug 09 07:10	4° $\mathfrak{E}$ 14'24		morning rise	4071 Nov 02 22:04	26° $\mathfrak{E}$ 32'50	
retrograde	4065 Nov 22 14:10	12° $\mathfrak{E}$ 25'26			4071 Dec 02 19:56	0° $\mathfrak{E}$	
opposition	4066 Jan 28 18:37	8° $\mathfrak{E}$ 57'09	0°-7'-40	retrograde	4072 Feb 11 23:47	4° $\mathfrak{E}$ 09'54	
min. Earth dist.	4066 Jan 28 16:20	8° $\mathfrak{E}$ 57'37	8.10609 AU	opposition	4072 Apr 19 04:52	0° $\mathfrak{E}$ 47'26	2°38'33
direct	4066 Apr 05 16:32	5° $\mathfrak{E}$ 29'18		min. Earth dist.	4072 Apr 19 04:41	0° $\mathfrak{E}$ 47'28	8.43223 AU
asc. node	4066 Apr 12 13:50	5° $\mathfrak{E}$ 31'59			4072 Apr 29 06:32	30° $\mathfrak{E}$	
evening set	4066 Jul 18 22:48	13° $\mathfrak{E}$ 36'00		direct	4072 Jun 27 13:49	27° $\mathfrak{E}$ 20'02	
	4066 Jul 29 21:59	15° $\mathfrak{E}$			4072 Aug 24 03:55	0° $\mathfrak{E}$	
				evening set	4072 Oct 11 14:41	5° $\mathfrak{E}$ 12'28	
conjunction	4066 Aug 06 01:45	15° $\mathfrak{E}$ 55'25	0°09'42	conjunction	4072 Oct 29 00:52	7° $\mathfrak{E}$ 21'42	2°10'16
minimum elong	4066 Aug 06 01:44	15° $\mathfrak{E}$ 55'25	0°09'41	minimum elong	4072 Oct 29 00:52	7° $\mathfrak{E}$ 21'42	2°10'17
behind sun begin	4066 Aug 05 19:44	15° $\mathfrak{E}$ 53'30		max. Earth dist.	4072 Oct 29 00:25	7° $\mathfrak{E}$ 21'34	10.47928 AU
behind sun end	4066 Aug 06 07:43	15° $\mathfrak{E}$ 57'20		morning rise	4072 Nov 15 06:50	9° $\mathfrak{E}$ 29'39	
max. Earth dist.	4066 Aug 06 04:23	15° $\mathfrak{E}$ 56'15	10.10642 AU		4073 Jan 06 20:52	15° $\mathfrak{E}$	
morning rise	4066 Aug 24 04:57	18° $\mathfrak{E}$ 14'55		retrograde	4073 Feb 23 19:12	16° $\mathfrak{E}$ 59'14	
retrograde	4066 Dec 06 19:36	26° $\mathfrak{E}$ 23'15			4073 Apr 14 08:55	15° $\mathfrak{E}$	
opposition	4067 Feb 11 18:03	22° $\mathfrak{E}$ 55'35	0°31'36	opposition	4073 May 02 09:11	13° $\mathfrak{E}$ 37'48	2°41'17
min. Earth dist.	4067 Feb 11 15:47	22° $\mathfrak{E}$ 56'03	8.11227 AU	min. Earth dist.	4073 May 02 08:45	13° $\mathfrak{E}$ 37'53	8.52952 AU
direct	4067 Apr 19 21:43	19° $\mathfrak{E}$ 27'12		direct	4073 Jul 11 05:56	10° $\mathfrak{E}$ 11'16	
evening set	4067 Aug 02 20:21	27° $\mathfrak{E}$ 35'49			4073 Sep 29 06:05	15° $\mathfrak{E}$	
				evening set	4073 Oct 24 21:55	17° $\mathfrak{E}$ 56'36	
conjunction	4067 Aug 20 23:10	29° $\mathfrak{E}$ 54'56	0°40'42				
minimum elong	4067 Aug 20 23:08	29° $\mathfrak{E}$ 54'55	0°40'42	conjunction	4073 Nov 11 04:28	20° $\mathfrak{E}$ 03'28	2°09'27
max. Earth dist.	4067 Aug 21 01:38	29° $\mathfrak{E}$ 55'44	10.12341 AU	minimum elong	4073 Nov 11 04:28	20° $\mathfrak{E}$ 03'28	2°09'28
	4067 Aug 21 14:53	0° $\mathfrak{E}$		max. Earth dist.	4073 Nov 11 04:21	20° $\mathfrak{E}$ 03'26	10.57718 AU
morning rise	4067 Sep 08 00:54	2° $\mathfrak{E}$ 13'43		morning rise	4073 Nov 28 06:37	22° $\mathfrak{E}$ 09'04	
retrograde	4067 Dec 20 22:52	10° $\mathfrak{E}$ 17'51		retrograde	4074 Mar 08 10:19	29° $\mathfrak{E}$ 31'38	
opposition	4068 Feb 25 16:32	6° $\mathfrak{E}$ 51'02	1°08'51	opposition	4074 May 15 08:45	26° $\mathfrak{E}$ 11'09	2°36'11
min. Earth dist.	4068 Feb 25 14:15	6° $\mathfrak{E}$ 51'30	8.14030 AU	min. Earth dist.	4074 May 15 08:36	26° $\mathfrak{E}$ 11'10	8.62672 AU
direct	4068 May 03 04:15	3° $\mathfrak{E}$ 22'20		direct	4074 Jul 24 14:51	22° $\mathfrak{E}$ 45'35	
evening set	4068 Aug 16 16:41	11° $\mathfrak{E}$ 31'11			4074 Nov 03 13:02	0° $\mathfrak{E}$	
				evening set	4074 Nov 06 19:55	0° $\mathfrak{E}$ 23'29	
conjunction	4068 Sep 03 17:47	13° $\mathfrak{E}$ 49'13	1°09'11				
minimum elong	4068 Sep 03 17:44	13° $\mathfrak{E}$ 49'12	1°09'11	conjunction	4074 Nov 23 23:11	2° $\mathfrak{E}$ 28'13	2°02'33
max. Earth dist.	4068 Sep 03 20:11	13° $\mathfrak{E}$ 49'59	10.16197 AU	minimum elong	4074 Nov 23 23:12	2° $\mathfrak{E}$ 28'13	2°02'33
morning rise	4068 Sep 21 16:36	16° $\mathfrak{E}$ 06'33		max. Earth dist.	4074 Nov 23 22:55	2° $\mathfrak{E}$ 28'08	10.67271 AU
retrograde	4069 Jan 02 20:36	24° $\mathfrak{E}$ 05'08		morning rise	4074 Dec 10 22:09	4° $\mathfrak{E}$ 31'42	



retrograde	4075 Mar 20 20:09	11° $\mathring{A}$ 47'57			4081 Feb 19 22:13	15° $\approx$	
opposition	4075 May 28 03:49	8° $\mathring{A}$ 28'19	2°23'59	retrograde	4081 May 29 21:31	21° $\approx$ 50'00	
min. Earth dist.	4075 May 28 04:31	8° $\mathring{A}$ 28'11	8.71928 AU	opposition	4081 Aug 08 09:55	18° $\approx$ 31'31	0°-18'-46
direct	4075 Aug 06 16:01	5° $\mathring{A}$ 03'49		min. Earth dist.	4081 Aug 08 11:57	18° $\approx$ 31'08	8.99441 AU
evening set	4075 Nov 19 09:15	12° $\mathring{A}$ 34'22		direct	4081 Oct 17 23:59	15° $\approx$ 12'29	
				evening set	4082 Jan 27 00:04	22° $\approx$ 16'30	
conjunction	4075 Dec 06 09:35	14° $\mathring{A}$ 37'13	1°50'12				
minimum elong	4075 Dec 06 09:37	14° $\mathring{A}$ 37'13	1°50'12	conjunction	4082 Feb 12 16:13	24° $\approx$ 14'29	0°-28'-19
max. Earth dist.	4075 Dec 06 08:26	14° $\mathring{A}$ 36'51	10.76164 AU	minimum elong	4082 Feb 12 16:12	24° $\approx$ 14'28	0°28'20
morning rise	4075 Dec 23 06:11	16° $\mathring{A}$ 38'57		max. Earth dist.	4082 Feb 12 13:57	24° $\approx$ 13'48	10.98794 AU
retrograde	4076 Mar 31 23:30	23° $\mathring{A}$ 49'54		morning rise	4082 Mar 01 08:47	26° $\approx$ 12'35	
opposition	4076 Jun 08 18:58	20° $\mathring{A}$ 30'58	2°05'39		4082 Apr 05 22:28	0° $\mathring{H}$	
min. Earth dist.	4076 Jun 08 20:26	20° $\mathring{A}$ 30'41	8.80326 AU	retrograde	4082 Jun 11 00:52	3° $\mathring{H}$ 19'51	
direct	4076 Aug 18 13:50	17° $\mathring{A}$ 07'33		opposition	4082 Aug 20 16:18	0° $\mathring{H}$ 00'48	0°-50'-11
evening set	4076 Nov 30 14:40	24° $\mathring{A}$ 31'13			4082 Aug 20 20:35	30° $\mathring{R}$ $\approx$	
				min. Earth dist.	4082 Aug 20 17:40	0° $\mathring{H}$ 00'33	8.97676 AU
conjunction	4076 Dec 17 12:39	26° $\mathring{A}$ 32'27	1°33'15	direct	4082 Oct 30 00:33	26° $\approx$ 42'09	
minimum elong	4076 Dec 17 12:41	26° $\mathring{A}$ 32'27	1°33'14		4083 Jan 03 07:09	0° $\mathring{H}$	
max. Earth dist.	4076 Dec 17 10:31	26° $\mathring{A}$ 31'48	10.84023 AU	evening set	4083 Feb 07 13:24	3° $\mathring{H}$ 45'59	
morning rise	4077 Jan 03 07:33	28° $\mathring{A}$ 32'45					
	4077 Jan 15 22:33	0° $\mathring{B}$		conjunction	4083 Feb 24 05:24	5° $\mathring{H}$ 44'15	0°-53'-18
retrograde	4077 Apr 13 01:08	5° $\mathring{B}$ 39'38		minimum elong	4083 Feb 24 05:23	5° $\mathring{H}$ 44'15	0°53'19
opposition	4077 Jun 21 06:32	2° $\mathring{B}$ 21'12	1°42'16	max. Earth dist.	4083 Feb 24 04:06	5° $\mathring{H}$ 43'52	10.96056 AU
min. Earth dist.	4077 Jun 21 07:55	2° $\mathring{B}$ 20'57	8.87514 AU	morning rise	4083 Mar 12 22:25	7° $\mathring{H}$ 42'52	
	4077 Jul 25 23:53	30° $\mathring{R}$ $\mathring{A}$		retrograde	4083 Jun 23 06:59	14° $\mathring{H}$ 54'22	
direct	4077 Aug 31 05:45	28° $\mathring{A}$ 58'53		opposition	4083 Sep 02 00:16	11° $\mathring{H}$ 34'32	-1°-19'-46
	4077 Oct 05 20:35	0° $\mathring{B}$		min. Earth dist.	4083 Sep 02 01:02	11° $\mathring{H}$ 34'23	8.94024 AU
evening set	4077 Dec 12 13:48	6° $\mathring{B}$ 16'24		direct	4083 Nov 10 23:13	8° $\mathring{H}$ 16'04	
				evening set	4084 Feb 19 05:19	15° $\mathring{H}$ 21'04	
conjunction	4077 Dec 29 10:01	8° $\mathring{B}$ 16'22	1°12'34				
minimum elong	4077 Dec 29 10:03	8° $\mathring{B}$ 16'22	1°12'34	conjunction	4084 Mar 06 21:27	17° $\mathring{H}$ 19'56	-1°-16'-17
max. Earth dist.	4077 Dec 29 08:03	8° $\mathring{B}$ 15'47	10.90519 AU	minimum elong	4084 Mar 06 21:25	17° $\mathring{H}$ 19'55	1°16'18
morning rise	4078 Jan 15 03:37	10° $\mathring{B}$ 15'35		max. Earth dist.	4084 Mar 06 19:52	17° $\mathring{H}$ 19'27	10.91479 AU
retrograde	4078 Apr 25 00:41	17° $\mathring{B}$ 19'41		morning rise	4084 Mar 23 15:28	19° $\mathring{H}$ 19'23	
opposition	4078 Jul 03 15:11	14° $\mathring{B}$ 01'34	1°14'59	retrograde	4084 Jul 04 17:21	26° $\mathring{H}$ 36'16	
min. Earth dist.	4078 Jul 03 16:14	14° $\mathring{B}$ 01'22	8.93196 AU	opposition	4084 Sep 13 10:29	23° $\mathring{H}$ 15'28	-1°-46'-24
direct	4078 Sep 12 15:18	10° $\mathring{B}$ 40'17		min. Earth dist.	4084 Sep 13 11:39	23° $\mathring{H}$ 15'15	8.88603 AU
evening set	4078 Dec 24 08:02	17° $\mathring{B}$ 52'37		direct	4084 Nov 21 23:38	19° $\mathring{H}$ 56'54	
				evening set	4085 Mar 02 00:54	27° $\mathring{H}$ 04'23	
conjunction	4079 Jan 10 02:50	19° $\mathring{B}$ 51'38	0°49'07				
minimum elong	4079 Jan 10 02:52	19° $\mathring{B}$ 51'39	0°49'08	conjunction	4085 Mar 18 17:42	29° $\mathring{H}$ 04'12	-1°-36'-20
max. Earth dist.	4079 Jan 10 01:20	19° $\mathring{B}$ 51'11	10.95386 AU	minimum elong	4085 Mar 18 17:39	29° $\mathring{H}$ 04'12	1°36'22
morning rise	4079 Jan 26 19:32	21° $\mathring{B}$ 50'05		max. Earth dist.	4085 Mar 18 15:27	29° $\mathring{H}$ 03'32	10.85198 AU
retrograde	4079 May 07 00:02	28° $\mathring{B}$ 52'50			4085 Mar 26 11:19	0° $\mathring{Y}$	
opposition	4079 Jul 15 22:13	25° $\mathring{B}$ 34'50	0°44'57	morning rise	4085 Apr 04 13:17	1° $\mathring{Y}$ 04'51	
min. Earth dist.	4079 Jul 15 23:22	25° $\mathring{B}$ 34'37	8.97157 AU	retrograde	4085 Jul 17 08:12	8° $\mathring{Y}$ 28'06	
direct	4079 Sep 24 21:20	22° $\mathring{B}$ 14'29		opposition	4085 Sep 25 23:43	5° $\mathring{Y}$ 06'13	-2°-8'-56
evening set	4080 Jan 04 22:46	29° $\mathring{B}$ 22'45		min. Earth dist.	4085 Sep 26 01:21	5° $\mathring{Y}$ 05'55	8.81551 AU
	4080 Jan 10 06:14	0° $\approx$		direct	4085 Dec 04 02:01	1° $\mathring{Y}$ 47'18	
				evening set	4086 Mar 14 01:23	8° $\mathring{Y}$ 58'32	
conjunction	4080 Jan 21 16:20	1° $\approx$ 21'07	0°23'52				
minimum elong	4080 Jan 21 16:20	1° $\approx$ 21'07	0°23'53	conjunction	4086 Mar 30 19:34	10° $\mathring{Y}$ 59'40	-1°-52'-32
max. Earth dist.	4080 Jan 21 14:27	1° $\approx$ 20'33	10.98445 AU	minimum elong	4086 Mar 30 19:32	10° $\mathring{Y}$ 59'40	1°52'33
morning rise	4080 Feb 07 08:38	3° $\approx$ 19'08		max. Earth dist.	4086 Mar 30 17:28	10° $\mathring{Y}$ 59'02	10.77374 AU
retrograde	4080 May 17 22:53	10° $\approx$ 21'58		morning rise	4086 Apr 16 17:05	13° $\mathring{Y}$ 01'50	
opposition	4080 Jul 27 04:17	7° $\approx$ 03'51	0°13'18	retrograde	4086 Jul 30 04:04	20° $\mathring{Y}$ 32'22	
min. Earth dist.	4080 Jul 27 06:12	7° $\approx$ 03'30	8.99263 AU	opposition	4086 Oct 08 16:35	17° $\mathring{Y}$ 09'17	-2°-26'-16
direct	4080 Oct 05 23:15	3° $\approx$ 44'15		min. Earth dist.	4086 Oct 08 18:02	17° $\mathring{Y}$ 09'00	8.73073 AU
desc. node	4080 Dec 30 11:45	9° $\approx$ 01'39		direct	4086 Dec 16 09:03	13° $\mathring{Y}$ 49'50	
evening set	4081 Jan 15 11:41	10° $\approx$ 49'44		evening set	4087 Mar 26 08:02	21° $\mathring{Y}$ 05'59	
conjunction	4081 Feb 01 04:18	12° $\approx$ 47'44	0°-2'-19	conjunction	4087 Apr 12 04:25	23° $\mathring{Y}$ 08'51	-2°-4'00
minimum elong	4081 Feb 01 04:17	12° $\approx$ 47'44	0°02'19	minimum elong	4087 Apr 12 04:24	23° $\mathring{Y}$ 08'51	2°04'01
behind sun begin	4081 Jan 31 21:19	12° $\approx$ 45'41		max. Earth dist.	4087 Apr 12 03:16	23° $\mathring{Y}$ 08'30	10.68292 AU
behind sun end	4081 Feb 01 11:16	12° $\approx$ 49'46		morning rise	4087 Apr 29 04:28	25° $\mathring{Y}$ 12'53	
max. Earth dist.	4081 Feb 01 01:36	12° $\approx$ 46'59	10.99596 AU		4087 Jun 12 22:45	0° $\mathring{B}$	
morning rise	4081 Feb 17 20:39	14° $\approx$ 45'39		retrograde	4087 Aug 12 08:06	2° $\mathring{B}$ 51'15	



	4087 Oct 14 08:55	30° $\Upsilon$		opposition	4094 Jan 08 16:17	18° $\Upsilon$ 46'48	-1°-3'-44
opposition	4087 Oct 21 13:42	29° $\Upsilon$ 26'55	-2°-37'-21	min. Earth dist.	4094 Jan 08 13:55	18° $\Upsilon$ 47'17	8.12650 AU
min. Earth dist.	4087 Oct 21 14:14	29° $\Upsilon$ 26'48	8.63540 AU	direct	4094 Mar 16 09:43	15° $\Upsilon$ 19'45	
direct	4087 Dec 28 19:43	26° $\Upsilon$ 06'44		evening set	4094 Jun 27 14:40	23° $\Upsilon$ 21'17	
	4088 Mar 07 02:04	0° $\Upsilon$					
evening set	4088 Apr 06 21:56	3° $\Upsilon$ 28'44		conjunction	4094 Jul 15 15:11	25° $\Upsilon$ 39'56	0°-36'-26
				minimum elong	4094 Jul 15 15:12	25° $\Upsilon$ 39'57	0°36'28
conjunction	4088 Apr 23 21:14	5° $\Upsilon$ 33'41	-2°-9'-57	max. Earth dist.	4094 Jul 15 18:15	25° $\Upsilon$ 40'55	10.10831 AU
minimum elong	4088 Apr 23 21:14	5° $\Upsilon$ 33'41	2°09'58	morning rise	4094 Aug 02 17:33	27° $\Upsilon$ 59'12	
max. Earth dist.	4088 Apr 23 20:26	5° $\Upsilon$ 33'26	10.58402 AU		4094 Aug 19 02:24	0° $\Omega$	
morning rise	4088 May 11 00:35	7° $\Upsilon$ 39'56		retrograde	4094 Nov 16 07:37	6° $\Omega$ 11'28	
	4088 Aug 01 22:54	15° $\Upsilon$		opposition	4095 Jan 22 15:34	2° $\Omega$ 42'25	0°-26'-3
retrograde	4088 Aug 24 19:18	15° $\Upsilon$ 26'11		min. Earth dist.	4095 Jan 22 13:03	2° $\Omega$ 42'56	8.09617 AU
	4088 Sep 16 16:00	15° $\Upsilon$			4095 Mar 01 13:15	30° $\Upsilon$	
opposition	4088 Nov 02 15:28	12° $\Upsilon$ 00'38	-2°-41'-16	direct	4095 Mar 30 10:48	29° $\Upsilon$ 14'24	
min. Earth dist.	4088 Nov 02 15:32	12° $\Upsilon$ 00'37	8.53440 AU		4095 Apr 28 05:30	0° $\Omega$	
direct	4089 Jan 09 09:22	8° $\Upsilon$ 39'29		evening set	4095 Jul 12 09:37	7° $\Omega$ 20'11	
	4089 Apr 10 09:25	15° $\Upsilon$					
evening set	4089 Apr 19 19:57	16° $\Upsilon$ 08'07		conjunction	4095 Jul 30 12:11	9° $\Omega$ 39'42	0°-5'-15
				minimum elong	4095 Jul 30 12:11	9° $\Omega$ 39'42	0°05'16
conjunction	4089 May 06 22:48	18° $\Upsilon$ 15'24	-2°-9'-46	behind sun begin	4095 Jul 30 05:05	9° $\Omega$ 37'26	
minimum elong	4089 May 06 22:49	18° $\Upsilon$ 15'24	2°09'47	behind sun end	4095 Jul 30 19:17	9° $\Omega$ 41'58	
max. Earth dist.	4089 May 06 21:56	18° $\Upsilon$ 15'08	10.48217 AU	max. Earth dist.	4095 Jul 30 14:53	9° $\Omega$ 40'32	10.08993 AU
morning rise	4089 May 24 06:05	20° $\Upsilon$ 24'05		morning rise	4095 Aug 17 15:33	11° $\Omega$ 59'28	
retrograde	4089 Sep 07 10:19	28° $\Upsilon$ 17'52			4095 Sep 11 13:24	15° $\Omega$	
opposition	4089 Nov 15 21:53	24° $\Upsilon$ 51'10	-2°-37'-19	asc. node	4095 Sep 30 17:01	17° $\Omega$ 00'31	
min. Earth dist.	4089 Nov 15 21:53	24° $\Upsilon$ 51'10	8.43301 AU	retrograde	4095 Nov 30 15:04	20° $\Omega$ 09'55	
direct	4090 Jan 22 07:10	21° $\Upsilon$ 28'54		opposition	4096 Feb 05 15:22	16° $\Omega$ 41'20	0°13'20
evening set	4090 May 03 02:25	29° $\Upsilon$ 04'34		min. Earth dist.	4096 Feb 05 13:16	16° $\Omega$ 41'45	8.08984 AU
	4090 May 10 12:52	0° $\Upsilon$			4096 Feb 27 01:44	15° $\Upsilon$	
				direct	4096 Apr 12 15:03	13° $\Omega$ 12'34	
conjunction	4090 May 20 09:31	1° $\Upsilon$ 14'24	-2°-3'-3		4096 May 27 15:10	15° $\Omega$	
minimum elong	4090 May 20 09:33	1° $\Upsilon$ 14'24	2°03'05	evening set	4096 Jul 26 07:05	21° $\Omega$ 21'04	
max. Earth dist.	4090 May 20 08:55	1° $\Upsilon$ 14'12	10.38279 AU				
morning rise	4090 Jun 06 21:14	3° $\Upsilon$ 25'38		conjunction	4096 Aug 13 10:08	23° $\Omega$ 40'38	0°26'24
retrograde	4090 Sep 21 07:10	11° $\Upsilon$ 26'11		minimum elong	4096 Aug 13 10:07	23° $\Omega$ 40'38	0°26'23
opposition	4090 Nov 29 08:59	7° $\Upsilon$ 58'29	-2°-25'-10	max. Earth dist.	4096 Aug 13 12:22	23° $\Omega$ 41'21	10.09578 AU
min. Earth dist.	4090 Nov 29 08:55	7° $\Upsilon$ 58'30	8.33665 AU	morning rise	4096 Aug 31 12:52	26° $\Omega$ 00'05	
direct	4091 Feb 04 11:15	4° $\Upsilon$ 35'00			4096 Oct 04 12:43	0° $\Upsilon$	
evening set	4091 May 16 17:28	12° $\Upsilon$ 17'47		retrograde	4096 Dec 13 19:43	4° $\Upsilon$ 06'57	
				opposition	4097 Feb 18 14:45	0° $\Upsilon$ 39'06	0°51'53
conjunction	4091 Jun 03 05:23	14° $\Upsilon$ 30'14	-1°-49'-45	min. Earth dist.	4097 Feb 18 12:53	0° $\Upsilon$ 39'29	8.10793 AU
minimum elong	4091 Jun 03 05:26	14° $\Upsilon$ 30'14	1°49'46		4097 Feb 26 13:58	30° $\Upsilon$	
max. Earth dist.	4091 Jun 03 05:54	14° $\Upsilon$ 30'23	10.29110 AU	direct	4097 Apr 26 22:20	27° $\Omega$ 09'54	
morning rise	4091 Jun 20 21:37	16° $\Upsilon$ 44'02			4097 Jun 23 15:10	0° $\Upsilon$	
retrograde	4091 Oct 05 09:22	24° $\Upsilon$ 50'06		evening set	4097 Aug 10 04:16	5° $\Upsilon$ 19'23	
opposition	4091 Dec 13 00:11	21° $\Upsilon$ 21'37	-2°-4'-56				
min. Earth dist.	4091 Dec 12 23:27	21° $\Upsilon$ 21'46	8.25039 AU	conjunction	4097 Aug 28 06:17	7° $\Upsilon$ 38'10	0°56'19
direct	4092 Feb 17 20:48	17° $\Upsilon$ 56'53		minimum elong	4097 Aug 28 06:14	7° $\Upsilon$ 38'09	0°56'18
evening set	4092 May 29 17:11	25° $\Upsilon$ 46'36		max. Earth dist.	4097 Aug 28 08:17	7° $\Upsilon$ 38'49	10.12558 AU
				morning rise	4097 Sep 15 06:51	9° $\Upsilon$ 56'29	
conjunction	4092 Jun 16 09:57	28° $\Upsilon$ 01'31	-1°-30'-14	retrograde	4097 Dec 27 18:32	17° $\Upsilon$ 58'19	
minimum elong	4092 Jun 16 10:00	28° $\Upsilon$ 01'32	1°30'15	opposition	4098 Mar 04 12:28	14° $\Upsilon$ 31'26	1°27'06
max. Earth dist.	4092 Jun 16 11:38	28° $\Upsilon$ 02'03	10.21195 AU	min. Earth dist.	4098 Mar 04 10:31	14° $\Upsilon$ 31'50	8.14937 AU
	4092 Jul 01 22:11	0° $\Upsilon$		direct	4098 May 11 06:27	11° $\Upsilon$ 02'07	
morning rise	4092 Jul 04 06:23	0° $\Upsilon$ 17'38		evening set	4098 Aug 24 22:56	19° $\Upsilon$ 10'44	
retrograde	4092 Oct 18 15:28	8° $\Upsilon$ 27'38					
opposition	4092 Dec 25 18:47	4° $\Upsilon$ 58'39	-1°-37'-20	conjunction	4098 Sep 11 22:36	21° $\Upsilon$ 28'03	1°22'43
min. Earth dist.	4092 Dec 25 17:11	4° $\Upsilon$ 58'59	8.17895 AU	minimum elong	4098 Sep 11 22:33	21° $\Upsilon$ 28'02	1°22'43
direct	4093 Mar 02 12:36	1° $\Upsilon$ 32'43		max. Earth dist.	4098 Sep 12 00:34	21° $\Upsilon$ 28'41	10.17755 AU
evening set	4093 Jun 13 00:43	9° $\Upsilon$ 28'48		morning rise	4098 Sep 29 19:46	23° $\Upsilon$ 44'34	
					4098 Nov 28 08:13	0° $\Omega$	
conjunction	4093 Jun 30 21:50	11° $\Upsilon$ 45'52	-1°-5'-21	retrograde	4099 Jan 10 12:42	1° $\Omega$ 40'10	
minimum elong	4093 Jun 30 21:53	11° $\Upsilon$ 45'53	1°05'23		4099 Feb 23 13:25	30° $\Upsilon$	
max. Earth dist.	4093 Jul 01 00:28	11° $\Upsilon$ 46'43	10.14980 AU	opposition	4099 Mar 18 07:21	28° $\Upsilon$ 14'26	1°56'52
morning rise	4093 Jul 18 21:45	14° $\Upsilon$ 03'52		min. Earth dist.	4099 Mar 18 05:02	28° $\Upsilon$ 14'55	8.21158 AU
retrograde	4093 Nov 01 23:07	22° $\Upsilon$ 15'58		direct	4099 May 25 12:12	24° $\Upsilon$ 45'22	



	4099 Aug 15 13:24	0°♄	
evening set	4099 Sep 08 12:33	2°♄51'18	
conjunction	4099 Sep 26 08:54	5°♄06'37	1°44'08
minimum elong	4099 Sep 26 08:51	5°♄06'36	1°44'08
max. Earth dist.	4099 Sep 26 11:11	5°♄07'20	10.24854 AU
morning rise	4099 Oct 14 01:46	7°♄20'52	
retrograde	4100 Jan 24 02:10	15°♄09'25	
opposition	4100 Mar 31 22:56	11°♄44'57	2°19'37
min. Earth dist.	4100 Mar 31 20:37	11°♄45'25	8.29080 AU
direct	4100 Jun 08 14:22	8°♄16'26	
evening set	4100 Sep 22 18:56	16°♄17'59	
conjunction	4100 Oct 10 11:20	18°♄30'58	1°59'31
minimum elong	4100 Oct 10 11:17	18°♄30'57	1°59'31
max. Earth dist.	4100 Oct 10 13:41	18°♄31'42	10.33436 AU
morning rise	4100 Oct 27 23:34	20°♄42'42	



retrograde	4100 Jan 24 02:10	15°♄09'25			4106 Mar 14 06:07	0°♄	
opposition	4100 Mar 31 22:56	11°♄44'57	2°19'37	retrograde	4106 Apr 09 01:45	0°♄34'04	
min. Earth dist.	4100 Mar 31 20:37	11°♄45'25	8.29080 AU		4106 May 05 04:35	30°♄♂	
direct	4100 Jun 08 14:22	8°♄16'26		opposition	4106 Jun 17 00:16	27°♄15'53	1°53'16
evening set	4100 Sep 22 18:56	16°♄17'59		min. Earth dist.	4106 Jun 17 01:23	27°♄15'40	8.85011 AU
				direct	4106 Aug 26 20:32	23°♄53'32	
conjunction	4100 Oct 10 11:20	18°♄30'58	1°59'31		4106 Nov 27 21:13	0°♄	
minimum elong	4100 Oct 10 11:17	18°♄30'57	1°59'31	evening set	4106 Dec 08 14:07	1°♄13'58	
max. Earth dist.	4100 Oct 10 13:41	18°♄31'42	10.33436 AU				
morning rise	4100 Oct 27 23:34	20°♄42'42		conjunction	4106 Dec 25 11:09	3°♄14'31	1°22'14
retrograde	4101 Feb 06 09:27	28°♄23'45		minimum elong	4106 Dec 25 11:12	3°♄14'31	1°22'13
opposition	4101 Apr 14 10:28	25°♄00'37	2°34'24	max. Earth dist.	4106 Dec 25 09:06	3°♄13'54	10.88269 AU
min. Earth dist.	4101 Apr 14 08:44	25°♄00'58	8.38251 AU	morning rise	4107 Jan 11 05:12	5°♄14'12	
direct	4101 Jun 22 12:45	21°♄32'52		retrograde	4107 Apr 21 01:45	12°♄19'37	
evening set	4101 Oct 06 16:50	29°♄28'41		opposition	4107 Jun 29 10:49	9°♄01'50	1°27'36
	4101 Oct 10 22:39	0°♄		min. Earth dist.	4107 Jun 29 13:18	9°♄01'22	8.91203 AU
				direct	4107 Sep 08 08:33	5°♄40'30	
conjunction	4101 Oct 24 05:04	1°♄39'10	2°08'19	evening set	4107 Dec 20 11:04	12°♄55'26	
minimum elong	4101 Oct 24 05:02	1°♄39'10	2°08'20				
max. Earth dist.	4101 Oct 24 06:48	1°♄39'43	10.43028 AU	conjunction	4108 Jan 06 06:21	14°♄54'53	0°59'54
morning rise	4101 Nov 10 12:53	3°♄48'21		minimum elong	4108 Jan 06 06:23	14°♄54'53	0°59'54
retrograde	4102 Feb 19 08:41	11°♄21'46		max. Earth dist.	4108 Jan 06 02:52	14°♄53'50	10.93604 AU
opposition	4102 Apr 27 17:23	7°♄59'58	2°40'53	morning rise	4108 Jan 22 23:31	16°♄53'42	
min. Earth dist.	4102 Apr 27 16:39	8°♄00'06	8.48169 AU	retrograde	4108 May 02 00:47	23°♄57'17	
direct	4102 Jul 06 07:18	4°♄33'09		opposition	4108 Jul 10 19:10	20°♄39'36	0°58'38
evening set	4102 Oct 20 05:25	12°♄22'14		min. Earth dist.	4108 Jul 10 22:00	20°♄39'05	8.95605 AU
				direct	4108 Sep 19 18:28	17°♄19'06	
conjunction	4102 Nov 06 13:38	14°♄30'16	2°10'29	evening set	4108 Dec 31 03:43	24°♄29'35	
minimum elong	4102 Nov 06 13:38	14°♄30'16	2°10'30				
max. Earth dist.	4102 Nov 06 14:08	14°♄30'25	10.53115 AU	conjunction	4109 Jan 16 21:49	26°♄28'18	0°35'19
	4102 Nov 10 13:39	15°♄		minimum elong	4109 Jan 16 21:50	26°♄28'18	0°35'19
morning rise	4102 Nov 23 17:33	16°♄37'00		max. Earth dist.	4109 Jan 16 18:15	26°♄27'15	10.97088 AU
retrograde	4103 Mar 04 02:10	24°♄03'04		morning rise	4109 Feb 02 14:25	28°♄26'35	
opposition	4103 May 10 19:45	20°♄42'27	2°39'16		4109 Feb 16 07:28	0°♄	
min. Earth dist.	4103 May 10 19:39	20°♄42'28	8.58307 AU	retrograde	4109 May 14 00:13	5°♄29'43	
direct	4103 Jul 19 20:01	17°♄16'44		opposition	4109 Jul 23 02:00	2°♄11'52	0°27'33
evening set	4103 Nov 02 08:24	24°♄58'27		min. Earth dist.	4109 Jul 23 04:24	2°♄11'25	8.98109 AU
					4109 Aug 24 12:04	30°♄♂	
conjunction	4103 Nov 19 13:00	27°♄04'11	2°06'17	direct	4109 Oct 01 23:08	28°♄52'03	
minimum elong	4103 Nov 19 13:01	27°♄04'11	2°06'17		4109 Nov 08 13:17	0°♄	
max. Earth dist.	4103 Nov 19 12:33	27°♄04'03	10.63176 AU	evening set	4110 Jan 11 17:51	5°♄59'14	
morning rise	4103 Dec 06 13:32	29°♄08'40					
	4103 Dec 13 18:19	0°♄♂		conjunction	4110 Jan 28 11:05	7°♄57'31	0°09'27
retrograde	4104 Mar 15 13:58	6°♄28'00		minimum elong	4110 Jan 28 11:05	7°♄57'31	0°09'28
opposition	4104 May 22 17:26	3°♄08'23	2°30'11	behind sun begin	4110 Jan 28 05:13	7°♄55'47	
min. Earth dist.	4104 May 22 17:18	3°♄08'25	8.68151 AU	behind sun end	4110 Jan 28 16:56	7°♄59'14	
	4104 Jul 13 23:57	30°♄♄		max. Earth dist.	4110 Jan 28 08:09	7°♄56'40	10.98628 AU
direct	4104 Aug 01 02:28	29°♄43'49		morning rise	4110 Feb 14 03:20	9°♄55'34	
	4104 Aug 19 02:50	0°♄♂			4110 Apr 05 21:21	15°♄	
evening set	4104 Nov 14 02:09	7°♄18'01		retrograde	4110 May 25 23:57	16°♄59'39	
				desc. node	4110 Jun 12 08:46	16°♄44'57	
conjunction	4104 Dec 01 03:47	9°♄21'42	1°56'19		4110 Jul 17 03:24	15°♄♄	
minimum elong	4104 Dec 01 03:49	9°♄21'43	1°56'19	opposition	4110 Aug 04 08:11	13°♄41'21	0°-4'-30
max. Earth dist.	4104 Dec 01 03:17	9°♄21'33	10.72708 AU	min. Earth dist.	4110 Aug 04 10:29	13°♄40'56	8.98658 AU
morning rise	4104 Dec 18 01:31	11°♄24'15		direct	4110 Oct 14 00:59	10°♄22'01	
retrograde	4105 Mar 27 21:08	18°♄37'43			4111 Jan 01 04:48	15°♄	
opposition	4105 Jun 04 10:44	15°♄18'55	2°14'30	evening set	4111 Jan 23 06:54	17°♄27'12	
min. Earth dist.	4105 Jun 04 10:48	15°♄18'54	8.77210 AU				
direct	4105 Aug 14 03:18	11°♄55'29		conjunction	4111 Feb 08 23:21	19°♄25'19	0°-16'-50
evening set	4105 Nov 26 11:35	19°♄22'26		minimum elong	4111 Feb 08 23:20	19°♄25'19	0°16'51
				max. Earth dist.	4111 Feb 08 20:06	19°♄24'22	10.98203 AU
conjunction	4105 Dec 13 10:47	21°♄24'23	1°41'20	morning rise	4111 Feb 25 15:44	21°♄23'28	
minimum elong	4105 Dec 13 10:49	21°♄24'24	1°41'20	retrograde	4111 Jun 07 02:34	28°♄29'54	
max. Earth dist.	4105 Dec 13 10:01	21°♄24'09	10.81218 AU	opposition	4111 Aug 16 14:50	25°♄10'57	0°-36'-25
morning rise	4105 Dec 30 06:20	23°♄25'18		min. Earth dist.	4111 Aug 16 17:35	25°♄10'26	8.97269 AU



direct	4111 Oct 26 01:22	21° $\approx$ 51'52		conjunction	4118 May 02 14:33	12° $\approx$ 58'13	-2°-10'-40
evening set	4112 Feb 03 20:04	28° $\approx$ 56'19		minimum elong	4118 May 02 14:34	12° $\approx$ 58'13	2°10'42
	4112 Feb 12 20:29	0° $\approx$		max. Earth dist.	4118 May 02 14:50	12° $\approx$ 58'18	10.50850 AU
				morning rise	4118 May 19 20:08	15° $\approx$ 06'01	
conjunction	4112 Feb 20 12:03	0° $\approx$ 54'37	0°-42'-25		4118 May 19 00:24	15° $\approx$	
minimum elong	4112 Feb 20 12:02	0° $\approx$ 54'36	0°42'27	retrograde	4118 Sep 02 19:11	22° $\approx$ 57'19	
max. Earth dist.	4112 Feb 20 08:20	0° $\approx$ 53'30	10.95855 AU	opposition	4118 Nov 11 12:30	19° $\approx$ 30'36	-2°-40'-7
morning rise	4112 Mar 08 05:00	2° $\approx$ 53'11		min. Earth dist.	4118 Nov 11 11:47	19° $\approx$ 30'45	8.46099 AU
retrograde	4112 Jun 18 05:14	10° $\approx$ 03'19		direct	4119 Jan 18 02:39	16° $\approx$ 08'27	
opposition	4112 Aug 27 22:31	6° $\approx$ 43'28	-1°-7'-1	evening set	4119 Apr 28 16:20	23° $\approx$ 41'39	
min. Earth dist.	4112 Aug 28 01:26	6° $\approx$ 42'56	8.94006 AU				
direct	4112 Nov 06 01:03	3° $\approx$ 24'26		conjunction	4119 May 15 21:43	25° $\approx$ 50'33	-2°-6'-47
evening set	4113 Feb 14 11:01	10° $\approx$ 29'34		minimum elong	4119 May 15 21:44	25° $\approx$ 50'33	2°06'49
				max. Earth dist.	4119 May 15 23:19	25° $\approx$ 51'03	10.41170 AU
conjunction	4113 Mar 03 03:05	12° $\approx$ 28'21	-1°-6'-27	morning rise	4119 Jun 02 07:23	28° $\approx$ 00'50	
minimum elong	4113 Mar 03 03:03	12° $\approx$ 28'20	1°06'28		4119 Jun 18 22:06	0° $\approx$	
max. Earth dist.	4113 Mar 02 23:55	12° $\approx$ 27'24	10.91671 AU	retrograde	4119 Sep 16 15:33	5° $\approx$ 59'14	
morning rise	4113 Mar 19 20:49	14° $\approx$ 27'38		opposition	4119 Nov 24 21:59	2° $\approx$ 31'37	-2°-31'-28
retrograde	4113 Jun 30 13:17	21° $\approx$ 42'45		min. Earth dist.	4119 Nov 24 20:11	2° $\approx$ 31'59	8.36629 AU
opposition	4113 Sep 09 07:49	18° $\approx$ 21'51	-1°-35'-9		4119 Dec 30 21:14	30° $\approx$	
min. Earth dist.	4113 Sep 09 09:57	18° $\approx$ 21'27	8.88980 AU	direct	4120 Jan 31 03:07	29° $\approx$ 08'30	
direct	4113 Nov 18 02:50	15° $\approx$ 02'42			4120 Mar 01 22:24	0° $\approx$	
evening set	4114 Feb 26 05:04	22° $\approx$ 09'50		evening set	4120 May 11 04:17	6° $\approx$ 48'45	
conjunction	4114 Mar 14 21:43	24° $\approx$ 09'27	-1°-27'-58	conjunction	4120 May 28 14:11	9° $\approx$ 00'13	-1°-56'-16
minimum elong	4114 Mar 14 21:41	24° $\approx$ 09'26	1°27'59	minimum elong	4120 May 28 14:14	9° $\approx$ 00'13	1°56'18
max. Earth dist.	4114 Mar 14 19:44	24° $\approx$ 08'51	10.85797 AU	max. Earth dist.	4120 May 28 16:19	9° $\approx$ 00'53	10.32064 AU
morning rise	4114 Mar 31 16:32	26° $\approx$ 09'47		morning rise	4120 Jun 15 04:21	11° $\approx$ 13'03	
	4114 May 06 03:08	0° $\approx$		retrograde	4120 Sep 29 17:34	19° $\approx$ 17'28	
retrograde	4114 Jul 13 04:01	3° $\approx$ 30'59		opposition	4120 Dec 07 12:01	15° $\approx$ 49'12	-2°-14'-35
opposition	4114 Sep 21 20:02	0° $\approx$ 08'55	-1°-59'-42	min. Earth dist.	4120 Dec 07 09:45	15° $\approx$ 49'39	8.27974 AU
min. Earth dist.	4114 Sep 21 21:10	0° $\approx$ 08'42	8.82368 AU	direct	4121 Feb 12 09:26	12° $\approx$ 25'03	
	4114 Sep 23 19:23	30° $\approx$		evening set	4121 May 25 00:55	20° $\approx$ 12'17	
direct	4114 Nov 30 04:26	26° $\approx$ 49'31					
	4115 Feb 01 03:51	0° $\approx$		conjunction	4121 Jun 11 15:29	22° $\approx$ 26'14	-1°-39'-17
evening set	4115 Mar 10 03:30	3° $\approx$ 59'51		minimum elong	4121 Jun 11 15:32	22° $\approx$ 26'15	1°39'19
				max. Earth dist.	4121 Jun 11 17:48	22° $\approx$ 26'59	10.24034 AU
conjunction	4115 Mar 26 21:10	6° $\approx$ 00'40	-1°-46'00	morning rise	4121 Jun 29 10:07	24° $\approx$ 41'29	
minimum elong	4115 Mar 26 21:08	6° $\approx$ 00'39	1°46'01		4121 Aug 16 07:26	0° $\approx$	
max. Earth dist.	4115 Mar 26 19:35	6° $\approx$ 00'11	10.78457 AU	retrograde	4121 Oct 13 23:08	2° $\approx$ 50'27	
morning rise	4115 Apr 12 17:44	8° $\approx$ 02'23			4121 Dec 13 08:15	30° $\approx$	
retrograde	4115 Jul 25 22:14	15° $\approx$ 30'34		opposition	4121 Dec 21 05:58	29° $\approx$ 21'49	-1°-49'-56
opposition	4115 Oct 04 11:47	12° $\approx$ 07'18	-2°-19'-31	min. Earth dist.	4121 Dec 21 03:41	29° $\approx$ 22'16	8.20632 AU
min. Earth dist.	4115 Oct 04 12:33	12° $\approx$ 07'09	8.74424 AU	direct	4122 Feb 25 23:02	25° $\approx$ 56'37	
direct	4115 Dec 12 08:26	8° $\approx$ 47'26			4122 May 06 10:53	0° $\approx$	
evening set	4116 Mar 21 07:46	16° $\approx$ 02'12		evening set	4122 Jun 08 05:46	3° $\approx$ 50'24	
conjunction	4116 Apr 07 03:06	18° $\approx$ 04'32	-1°-59'-41	conjunction	4122 Jun 26 00:52	6° $\approx$ 06'37	-1°-16'-31
minimum elong	4116 Apr 07 03:04	18° $\approx$ 04'32	1°59'41	minimum elong	4122 Jun 26 00:55	6° $\approx$ 06'38	1°16'33
max. Earth dist.	4116 Apr 07 01:15	18° $\approx$ 03'58	10.69941 AU	max. Earth dist.	4122 Jun 26 03:34	6° $\approx$ 07'29	10.17551 AU
morning rise	4116 Apr 24 02:08	20° $\approx$ 08'00		morning rise	4122 Jul 13 23:29	8° $\approx$ 23'55	
retrograde	4116 Aug 06 22:54	27° $\approx$ 43'44		retrograde	4122 Oct 28 05:57	16° $\approx$ 35'38	
opposition	4116 Oct 16 07:25	24° $\approx$ 19'16	-2°-33'-29	opposition	4123 Jan 04 02:59	13° $\approx$ 06'52	-1°-18'-38
min. Earth dist.	4116 Oct 16 08:21	24° $\approx$ 19'05	8.65467 AU	min. Earth dist.	4123 Jan 04 00:37	13° $\approx$ 07'21	8.15041 AU
direct	4116 Dec 23 17:27	20° $\approx$ 58'44		direct	4123 Mar 11 19:24	9° $\approx$ 40'40	
evening set	4117 Apr 02 18:45	28° $\approx$ 18'57		evening set	4123 Jun 22 17:43	17° $\approx$ 40'10	
	4117 Apr 16 13:26	0° $\approx$					
conjunction	4117 Apr 19 16:38	0° $\approx$ 23'11	-2°-8'-8	conjunction	4123 Jul 10 16:45	19° $\approx$ 58'11	0°-49'-6
minimum elong	4117 Apr 19 16:37	0° $\approx$ 23'11	2°08'09	minimum elong	4123 Jul 10 16:47	19° $\approx$ 58'11	0°49'08
max. Earth dist.	4117 Apr 19 15:26	0° $\approx$ 22'49	10.60601 AU	max. Earth dist.	4123 Jul 10 19:55	19° $\approx$ 59'12	10.12985 AU
morning rise	4117 May 06 18:41	2° $\approx$ 28'42		morning rise	4123 Jul 28 18:21	22° $\approx$ 16'58	
retrograde	4117 Aug 20 06:06	10° $\approx$ 12'16			4123 Oct 19 07:40	0° $\approx$	
opposition	4117 Oct 29 07:36	6° $\approx$ 46'38	-2°-40'-37	retrograde	4123 Nov 11 14:12	0° $\approx$ 29'27	
min. Earth dist.	4117 Oct 29 08:02	6° $\approx$ 46'33	8.55876 AU		4123 Dec 23 03:09	30° $\approx$	
direct	4118 Jan 05 06:52	3° $\approx$ 25'20		opposition	4124 Jan 18 02:02	27° $\approx$ 00'49	0°-42'-23
evening set	4118 Apr 15 13:17	10° $\approx$ 51'46		min. Earth dist.	4124 Jan 17 23:25	27° $\approx$ 01'21	8.11510 AU
				direct	4124 Mar 24 19:47	23° $\approx$ 33'42	



	4124 Jun 23 07:30	0°♈		evening set	4130 Oct 01 06:12	24°♊13'04	
evening set	4124 Jul 06 11:12	1°♈37'44					
conjunction	4124 Jul 24 12:59	3°♈56'53	0°-18'-37	conjunction	4130 Oct 18 20:10	26°♊24'39	2°05'23
minimum elong	4124 Jul 24 12:59	3°♈56'53	0°18'38	minimum elong	4130 Oct 18 20:08	26°♊24'38	2°05'24
max. Earth dist.	4124 Jul 24 16:36	3°♈58'03	10.10564 AU	max. Earth dist.	4130 Oct 18 20:17	26°♊24'41	10.38790 AU
morning rise	4124 Aug 11 16:04	6°♈16'26		morning rise	4130 Nov 05 06:03	28°♊34'58	
retrograde	4124 Nov 24 22:20	14°♈27'42			4130 Nov 16 23:53	0°♈	
opposition	4125 Jan 31 01:54	10°♈59'26	0°-3'-25	retrograde	4131 Feb 14 06:20	6°♈11'48	
min. Earth dist.	4125 Jan 30 22:54	11°♈00'03	8.10187 AU	opposition	4131 Apr 22 12:33	2°♈49'25	2°39'09
asc. node	4125 Mar 04 23:10	8°♈33'38		min. Earth dist.	4131 Apr 22 11:45	2°♈49'35	8.43648 AU
direct	4125 Apr 07 23:25	7°♈31'34			4131 Jun 03 12:45	30°♈	
	4125 Jul 16 04:24	15°♈		direct	4131 Jun 30 23:08	29°♈22'08	
evening set	4125 Jul 21 07:57	15°♈38'46			4131 Jul 28 04:53	0°♈	
				evening set	4131 Oct 14 22:52	7°♈14'20	
conjunction	4125 Aug 08 10:59	17°♈58'16	0°13'06	conjunction	4131 Nov 01 08:53	9°♈23'27	2°10'22
minimum elong	4125 Aug 08 10:58	17°♈58'15	0°13'05	minimum elong	4131 Nov 01 08:52	9°♈23'27	2°10'22
behind sun begin	4125 Aug 08 06:44	17°♈56'54		max. Earth dist.	4131 Nov 01 09:11	9°♈23'32	10.48376 AU
behind sun end	4125 Aug 08 15:13	17°♈59'37		morning rise	4131 Nov 18 14:28	11°♈31'15	
max. Earth dist.	4125 Aug 08 14:36	17°♈59'25	10.10350 AU		4131 Dec 19 02:46	15°♈	
morning rise	4125 Aug 26 14:01	20°♈17'48		retrograde	4132 Feb 27 03:32	19°♈00'35	
retrograde	4125 Dec 09 04:43	28°♈26'09		opposition	4132 May 04 16:54	15°♈39'15	2°40'56
opposition	4126 Feb 14 01:38	24°♈58'30	0°35'46	min. Earth dist.	4132 May 04 16:14	15°♈39'23	8.53410 AU
min. Earth dist.	4126 Feb 13 22:49	24°♈59'05	8.11062 AU		4132 May 13 02:47	15°♈	
direct	4126 Apr 22 05:15	21°♈30'05		direct	4132 Jul 13 13:27	12°♈12'50	
evening set	4126 Aug 05 05:38	29°♈39'01			4132 Sep 10 21:51	15°♈	
	4126 Aug 07 23:58	0°♈		evening set	4132 Oct 27 05:43	19°♈57'49	
conjunction	4126 Aug 23 08:21	1°♈58'06	0°43'55	conjunction	4132 Nov 13 12:02	22°♈04'36	2°08'49
minimum elong	4126 Aug 23 08:19	1°♈58'06	0°43'55	minimum elong	4132 Nov 13 12:03	22°♈04'36	2°08'49
max. Earth dist.	4126 Aug 23 11:18	1°♈59'04	10.12286 AU	max. Earth dist.	4132 Nov 13 12:25	22°♈04'43	10.58190 AU
morning rise	4126 Sep 10 09:49	4°♈16'51		morning rise	4132 Nov 30 13:53	24°♈10'04	
retrograde	4126 Dec 23 07:03	12°♈20'52			4133 Jan 27 11:44	0°♈	
opposition	4127 Feb 28 00:15	8°♈54'06	1°12'39	retrograde	4133 Mar 10 18:09	1°♈32'21	
min. Earth dist.	4127 Feb 27 22:05	8°♈54'33	8.14071 AU		4133 Apr 23 02:27	30°♈	
direct	4127 May 06 12:29	5°♈25'24		opposition	4133 May 17 16:30	28°♈11'57	2°34'56
evening set	4127 Aug 20 02:04	13°♈34'27		min. Earth dist.	4133 May 17 16:44	28°♈11'54	8.63148 AU
				direct	4133 Jul 26 21:35	24°♈46'30	
conjunction	4127 Sep 07 02:54	15°♈52'24	1°12'01		4133 Oct 19 05:58	0°♈	
minimum elong	4127 Sep 07 02:51	15°♈52'23	1°12'01	evening set	4133 Nov 09 03:15	2°♈23'59	
max. Earth dist.	4127 Sep 07 04:58	15°♈53'04	10.16313 AU				
morning rise	4127 Sep 25 01:26	18°♈09'39		conjunction	4133 Nov 26 06:15	4°♈28'37	2°01'13
retrograde	4128 Jan 06 04:21	26°♈08'02		minimum elong	4133 Nov 26 06:16	4°♈28'37	2°01'13
opposition	4128 Mar 12 20:43	22°♈42'20	1°44'58	max. Earth dist.	4133 Nov 26 05:39	4°♈28'26	10.67753 AU
min. Earth dist.	4128 Mar 12 19:23	22°♈42'36	8.19133 AU	morning rise	4133 Dec 13 05:08	6°♈32'02	
direct	4128 May 19 18:52	19°♈13'36		retrograde	4134 Mar 23 01:42	13°♈47'59	
evening set	4128 Sep 02 18:27	27°♈20'54		opposition	4134 May 30 11:22	10°♈28'25	2°21'57
				min. Earth dist.	4134 May 30 12:26	10°♈28'12	8.72407 AU
conjunction	4128 Sep 20 16:12	29°♈37'05	1°35'42	direct	4134 Aug 09 00:43	7°♈03'58	
minimum elong	4128 Sep 20 16:09	29°♈37'04	1°35'43	evening set	4134 Nov 21 16:06	14°♈34'07	
max. Earth dist.	4128 Sep 20 17:16	29°♈37'26	10.22296 AU				
	4128 Sep 23 16:02	0°♈		conjunction	4134 Dec 08 16:15	16°♈36'50	1°48'16
morning rise	4128 Oct 08 10:54	1°♈52'19		minimum elong	4134 Dec 08 16:17	16°♈36'51	1°48'16
retrograde	4129 Jan 18 20:02	9°♈44'04		max. Earth dist.	4134 Dec 08 14:38	16°♈36'21	10.76637 AU
opposition	4129 Mar 26 14:11	6°♈19'27	2°10'52	morning rise	4134 Dec 25 12:51	18°♈38'30	
min. Earth dist.	4129 Mar 26 13:26	6°♈19'36	8.26022 AU	retrograde	4135 Apr 04 06:16	25°♈49'11	
direct	4129 Jun 02 23:37	2°♈50'58		opposition	4135 Jun 12 02:17	22°♈30'16	2°02'56
evening set	4129 Sep 17 04:18	10°♈54'41		min. Earth dist.	4135 Jun 12 03:26	22°♈30'03	8.80780 AU
				direct	4135 Aug 21 22:07	19°♈06'55	
conjunction	4129 Oct 04 22:17	13°♈08'41	1°53'45	evening set	4135 Dec 03 21:05	26°♈30'06	
minimum elong	4129 Oct 04 22:14	13°♈08'40	1°53'45				
max. Earth dist.	4129 Oct 04 22:35	13°♈08'47	10.29933 AU	conjunction	4135 Dec 20 19:00	28°♈31'16	1°30'48
morning rise	4129 Oct 22 12:39	15°♈21'32		minimum elong	4135 Dec 20 19:02	28°♈31'17	1°30'48
retrograde	4130 Feb 01 04:49	23°♈05'58		max. Earth dist.	4135 Dec 20 17:20	28°♈30'46	10.84461 AU
opposition	4130 Apr 09 03:40	19°♈42'29	2°29'07		4136 Jan 02 03:15	0°♈	
min. Earth dist.	4130 Apr 09 02:56	19°♈42'38	8.34352 AU	morning rise	4136 Jan 06 13:48	0°♈31'30	
direct	4130 Jun 17 01:33	16°♈14'30		retrograde	4136 Apr 15 07:31	7°♈38'09	



opposition	4136 Jun 23 13:41	4°☾19'41	1°39'01	max. Earth dist.	4142 Feb 26 08:53	7°☾39'23	10.96093 AU
min. Earth dist.	4136 Jun 23 14:18	4°☾19'34	8.87921 AU	morning rise	4142 Mar 15 03:20	9°☾38'25	
direct	4136 Sep 02 12:55	0°☾57'26		retrograde	4142 Jun 25 13:05	16°☾50'03	
evening set	4136 Dec 14 19:46	8°☾14'28		opposition	4142 Sep 04 06:22	13°☾30'10	-1°-23'-4
				min. Earth dist.	4142 Sep 04 07:25	13°☾29'58	8.94032 AU
conjunction	4136 Dec 31 15:58	10°☾14'21	1°09'45	direct	4142 Nov 13 04:45	10°☾11'43	
minimum elong	4136 Dec 31 16:00	10°☾14'22	1°09'45	evening set	4143 Feb 21 10:15	17°☾16'39	
max. Earth dist.	4136 Dec 31 14:56	10°☾14'03	10.90905 AU				
morning rise	4137 Jan 17 09:27	12°☾13'31		conjunction	4143 Mar 10 02:18	19°☾15'30	-1°-18'-48
retrograde	4137 Apr 27 07:35	19°☾17'26		minimum elong	4143 Mar 10 02:16	19°☾15'30	1°18'49
opposition	4137 Jul 05 22:14	15°☾59'17	1°11'20	max. Earth dist.	4143 Mar 10 00:11	19°☾14'52	10.91461 AU
min. Earth dist.	4137 Jul 05 23:07	15°☾59'07	8.93551 AU	morning rise	4143 Mar 26 20:29	21°☾14'59	
direct	4137 Sep 14 22:33	12°☾38'02		retrograde	4143 Jul 07 23:09	28°☾32'02	
evening set	4137 Dec 26 13:40	19°☾49'55		opposition	4143 Sep 16 16:37	25°☾11'13	-1°-49'-12
				min. Earth dist.	4143 Sep 16 18:05	25°☾10'57	8.88570 AU
conjunction	4138 Jan 12 08:22	21°☾48'52	0°46'03	direct	4143 Nov 25 04:44	21°☾52'41	
minimum elong	4138 Jan 12 08:24	21°☾48'53	0°46'03	evening set	4144 Mar 04 05:48	29°☾00'08	
max. Earth dist.	4138 Jan 12 06:51	21°☾48'25	10.95714 AU		4144 Mar 12 15:13	0°☾	
morning rise	4138 Jan 29 01:05	23°☾47'17					
	4138 Apr 07 11:49	0°☾		conjunction	4144 Mar 20 22:41	0°☾59'58	-1°-38'-23
retrograde	4138 May 09 06:05	0°☾49'52		minimum elong	4144 Mar 20 22:38	0°☾59'57	1°38'24
	4138 Jun 10 14:26	30°☾		max. Earth dist.	4144 Mar 20 20:55	0°☾59'26	10.85157 AU
opposition	4138 Jul 18 05:02	27°☾31'50	0°41'04	morning rise	4144 Apr 06 18:21	3°☾00'38	
min. Earth dist.	4138 Jul 18 06:40	27°☾31'32	8.97455 AU	retrograde	4144 Jul 19 13:03	10°☾24'07	
direct	4138 Sep 27 02:51	24°☾11'29		opposition	4144 Sep 28 05:46	7°☾02'11	-2°-11'-7
	4138 Dec 26 12:59	0°☾		min. Earth dist.	4144 Sep 28 06:56	7°☾01'58	8.81518 AU
evening set	4139 Jan 07 04:10	1°☾19'23		direct	4144 Dec 06 08:21	3°☾43'19	
				evening set	4145 Mar 16 06:28	10°☾54'32	
conjunction	4139 Jan 23 21:35	3°☾17'41	0°20'39				
minimum elong	4139 Jan 23 21:36	3°☾17'41	0°20'40	conjunction	4145 Apr 02 00:51	12°☾55'43	-1°-54'-2
max. Earth dist.	4139 Jan 23 19:10	3°☾16'58	10.98709 AU	minimum elong	4145 Apr 02 00:49	12°☾55'42	1°54'03
morning rise	4139 Feb 09 14:00	5°☾15'40		max. Earth dist.	4145 Apr 01 23:48	12°☾55'24	10.77352 AU
retrograde	4139 May 21 03:27	12°☾18'26		morning rise	4145 Apr 18 22:24	14°☾57'54	
opposition	4139 Jul 30 10:50	9°☾00'15	0°09'21	retrograde	4145 Aug 01 11:08	22°☾28'35	
min. Earth dist.	4139 Jul 30 12:47	8°☾59'53	8.99492 AU	opposition	4145 Oct 10 22:24	19°☾05'28	-2°-27'-44
direct	4139 Oct 09 06:08	5°☾40'39		min. Earth dist.	4145 Oct 10 23:01	19°☾05'21	8.73073 AU
desc. node	4139 Nov 17 09:26	6°☾54'16		direct	4145 Dec 18 14:42	15°☾46'04	
evening set	4140 Jan 18 16:46	12°☾45'50		evening set	4146 Mar 28 13:20	23°☾02'11	
conjunction	4140 Feb 04 09:23	14°☾43'48	0°-5'-33	conjunction	4146 Apr 14 09:51	25°☾05'05	-2°-4'-53
minimum elong	4140 Feb 04 09:22	14°☾43'48	0°05'33	minimum elong	4146 Apr 14 09:49	25°☾05'05	2°04'53
behind sun begin	4140 Feb 04 02:39	14°☾41'49		max. Earth dist.	4146 Apr 14 08:52	25°☾04'47	10.68299 AU
behind sun end	4140 Feb 04 16:06	14°☾45'46		morning rise	4146 May 01 10:02	27°☾09'10	
max. Earth dist.	4140 Feb 04 07:08	14°☾43'10	10.99788 AU		4146 May 26 09:13	0°☾	
	4140 Feb 06 16:01	15°☾		retrograde	4146 Aug 14 15:22	4°☾47'36	
morning rise	4140 Feb 21 01:43	16°☾41'41		opposition	4146 Oct 23 19:31	1°☾23'17	-2°-38'00
retrograde	4140 Jun 01 04:18	23°☾46'03		min. Earth dist.	4146 Oct 23 19:52	1°☾23'13	8.63552 AU
opposition	4140 Aug 10 16:20	20°☾27'30	0°-22'-39		4146 Nov 11 09:54	30°☾	
min. Earth dist.	4140 Aug 10 17:36	20°☾27'16	8.99596 AU	direct	4146 Dec 30 23:35	28°☾03'07	
direct	4140 Oct 20 07:15	17°☾08'30			4147 Feb 16 20:15	0°☾	
evening set	4141 Jan 29 04:56	24°☾12'14		evening set	4147 Apr 10 03:21	5°☾25'10	
conjunction	4141 Feb 14 21:08	26°☾10'11	0°-31'-24	conjunction	4147 Apr 27 02:44	7°☾30'08	-2°-10'-9
minimum elong	4141 Feb 14 21:07	26°☾10'11	0°31'26	minimum elong	4147 Apr 27 02:44	7°☾30'08	2°10'09
max. Earth dist.	4141 Feb 14 19:45	26°☾09'47	10.98907 AU	max. Earth dist.	4147 Apr 27 01:16	7°☾29'41	10.58410 AU
morning rise	4141 Mar 03 13:38	28°☾08'17		morning rise	4147 May 14 06:23	9°☾36'27	
	4141 Mar 20 02:18	0°☾			4147 Jul 04 11:04	15°☾	
retrograde	4141 Jun 13 06:51	5°☾15'38		retrograde	4147 Aug 28 00:41	17°☾22'46	
opposition	4141 Aug 22 22:33	1°☾56'30	0°-53'-50		4147 Oct 23 05:30	15°☾	
min. Earth dist.	4141 Aug 22 23:21	1°☾56'21	8.97753 AU	opposition	4147 Nov 05 21:20	13°☾57'14	-2°-41'-3
	4141 Sep 19 22:28	30°☾		min. Earth dist.	4147 Nov 05 21:55	13°☾57'07	8.53438 AU
direct	4141 Nov 01 05:19	28°☾37'54		direct	4148 Jan 12 15:10	10°☾36'07	
	4141 Dec 12 07:53	0°☾			4148 Mar 26 09:30	15°☾	
evening set	4142 Feb 09 18:20	5°☾41'34		evening set	4148 Apr 22 01:33	18°☾04'49	
conjunction	4142 Feb 26 10:17	7°☾39'48	0°-56'-9	conjunction	4148 May 09 04:38	20°☾12'10	-2°-9'-15
minimum elong	4142 Feb 26 10:15	7°☾39'48	0°56'11	minimum elong	4148 May 09 04:39	20°☾12'11	2°09'16



max. Earth dist.	4148 May 09 03:14	20° $\text{C}$ 11'44	10.48209 AU	max. Earth dist.	4154 Aug 01 21:16	11° $\text{Q}$ 38'46	10.09023 AU
morning rise	4148 May 26 12:18	22° $\text{C}$ 20'56		morning rise	4154 Aug 19 22:57	13° $\text{Q}$ 58'02	
	4148 Aug 23 17:00	0° $\text{II}$		asc. node	4154 Aug 24 19:21	14° $\text{Q}$ 34'37	
retrograde	4148 Sep 09 16:09	0° $\text{II}$ 14'46			4154 Aug 28 05:11	15° $\text{Q}$	
	4148 Sep 26 16:31	30° $\text{R}$ 8		retrograde	4154 Dec 02 21:18	22° $\text{Q}$ 08'16	
opposition	4148 Nov 18 03:40	26° $\text{C}$ 48'06	-2°-36'-13	opposition	4155 Feb 07 21:20	18° $\text{Q}$ 39'44	0°17'23
min. Earth dist.	4148 Nov 18 04:17	26° $\text{C}$ 47'59	8.43275 AU	min. Earth dist.	4155 Feb 07 19:47	18° $\text{Q}$ 40'03	8.09043 AU
direct	4149 Jan 24 13:03	23° $\text{C}$ 25'51		direct	4155 Apr 15 22:29	15° $\text{Q}$ 10'55	
	4149 Apr 26 21:35	0° $\text{II}$		evening set	4155 Jul 29 14:29	23° $\text{Q}$ 19'36	
evening set	4149 May 05 08:16	1° $\text{II}$ 01'37					
conjunction	4149 May 22 15:46	3° $\text{II}$ 11'33	-2°-1'-49	conjunction	4155 Aug 16 17:30	25° $\text{Q}$ 39'07	0°29'34
minimum elong	4149 May 22 15:48	3° $\text{II}$ 11'34	2°01'51	minimum elong	4155 Aug 16 17:29	25° $\text{Q}$ 39'06	0°29'34
max. Earth dist.	4149 May 22 15:20	3° $\text{II}$ 11'25	10.38242 AU	max. Earth dist.	4155 Aug 16 19:20	25° $\text{Q}$ 39'42	10.09664 AU
morning rise	4149 Jun 09 03:46	5° $\text{II}$ 22'53		morning rise	4155 Sep 03 20:10	27° $\text{Q}$ 58'30	
retrograde	4149 Sep 23 13:41	13° $\text{II}$ 23'26			4155 Sep 20 07:12	0° $\text{np}$	
opposition	4149 Dec 01 14:42	9° $\text{II}$ 55'48	-2°-23'-13	retrograde	4155 Dec 17 00:27	6° $\text{np}$ 05'09	
min. Earth dist.	4149 Dec 01 14:41	9° $\text{II}$ 55'48	8.33609 AU	opposition	4156 Feb 21 20:38	2° $\text{np}$ 37'20	0°55'40
direct	4150 Feb 06 16:40	6° $\text{II}$ 32'19		min. Earth dist.	4156 Feb 21 18:45	2° $\text{np}$ 37'43	8.10907 AU
evening set	4150 May 18 23:35	14° $\text{II}$ 15'15			4156 Mar 29 02:20	30° $\text{R}$ Q	
				direct	4156 Apr 29 06:04	29° $\text{Q}$ 08'06	
conjunction	4150 Jun 05 11:55	16° $\text{II}$ 27'47	-1°-47'-52		4156 May 30 05:31	0° $\text{np}$	
minimum elong	4150 Jun 05 11:58	16° $\text{II}$ 27'48	1°47'53	evening set	4156 Aug 12 11:43	7° $\text{np}$ 17'40	
max. Earth dist.	4150 Jun 05 12:58	16° $\text{II}$ 28'07	10.29045 AU	conjunction	4156 Aug 30 13:38	9° $\text{np}$ 36'23	0°59'11
morning rise	4150 Jun 23 04:20	18° $\text{II}$ 41'40		minimum elong	4156 Aug 30 13:35	9° $\text{np}$ 36'23	0°59'11
retrograde	4150 Oct 07 15:55	26° $\text{II}$ 47'44		max. Earth dist.	4156 Aug 30 15:49	9° $\text{np}$ 37'05	10.12689 AU
opposition	4150 Dec 15 05:56	23° $\text{II}$ 19'18	-2°-2'-13	morning rise	4156 Sep 17 13:55	11° $\text{np}$ 54'36	
min. Earth dist.	4150 Dec 15 04:47	23° $\text{II}$ 19'32	8.24966 AU	retrograde	4156 Dec 30 00:03	19° $\text{np}$ 56'12	
direct	4151 Feb 20 02:44	19° $\text{II}$ 54'35		opposition	4157 Mar 06 18:15	16° $\text{np}$ 29'20	1°30'25
evening set	4151 Jun 01 23:39	27° $\text{II}$ 44'27		min. Earth dist.	4157 Mar 06 15:55	16° $\text{np}$ 29'49	8.15091 AU
conjunction	4151 Jun 19 16:45	29° $\text{II}$ 59'29	-1°-27'-46	direct	4157 May 13 12:32	13° $\text{np}$ 00'00	
minimum elong	4151 Jun 19 16:48	29° $\text{II}$ 59'30	1°27'48	evening set	4157 Aug 27 06:10	21° $\text{np}$ 08'36	
	4151 Jun 19 18:23	0° $\text{Q}$		conjunction	4157 Sep 14 05:40	23° $\text{np}$ 25'51	1°25'08
max. Earth dist.	4151 Jun 19 18:37	0° $\text{Q}$ 00'04	10.21126 AU	minimum elong	4157 Sep 14 05:37	23° $\text{np}$ 25'50	1°25'08
morning rise	4151 Jul 07 13:23	2° $\text{Q}$ 15'40		max. Earth dist.	4157 Sep 14 08:12	23° $\text{np}$ 26'39	10.17923 AU
retrograde	4151 Oct 21 21:42	10° $\text{Q}$ 25'37		morning rise	4157 Oct 02 02:24	25° $\text{np}$ 42'14	
opposition	4151 Dec 29 00:36	6° $\text{Q}$ 56'41	-1°-33'-59		4157 Nov 08 08:54	0° $\text{Q}$	
min. Earth dist.	4151 Dec 28 22:51	6° $\text{Q}$ 57'02	8.17828 AU	retrograde	4158 Jan 12 19:26	3° $\text{Q}$ 37'35	
direct	4152 Mar 04 18:22	3° $\text{Q}$ 30'44		opposition	4158 Mar 20 13:09	0° $\text{Q}$ 11'52	1°59'31
evening set	4152 Jun 15 07:37	11° $\text{Q}$ 27'00		min. Earth dist.	4158 Mar 20 10:40	0° $\text{Q}$ 12'22	8.21347 AU
					4158 Mar 22 23:35	30° $\text{R}$ np	
conjunction	4152 Jul 03 04:57	13° $\text{Q}$ 44'10	-1°-2'-27	direct	4158 May 27 17:37	26° $\text{np}$ 42'46	
minimum elong	4152 Jul 03 04:59	13° $\text{Q}$ 44'10	1°02'29		4158 Jul 30 02:03	0° $\text{Q}$	
max. Earth dist.	4152 Jul 03 07:01	13° $\text{Q}$ 44'50	10.14927 AU	evening set	4158 Sep 10 19:26	4° $\text{Q}$ 48'37	
morning rise	4152 Jul 21 05:05	16° $\text{Q}$ 02'14					
retrograde	4152 Nov 04 06:16	24° $\text{Q}$ 14'12		conjunction	4158 Sep 28 15:32	7° $\text{Q}$ 03'51	1°45'57
opposition	4153 Jan 10 22:10	20° $\text{Q}$ 45'06	0°-59'-55	minimum elong	4158 Sep 28 15:29	7° $\text{Q}$ 03'50	1°45'58
min. Earth dist.	4153 Jan 10 20:18	20° $\text{Q}$ 45'29	8.12607 AU	max. Earth dist.	4158 Sep 28 18:07	7° $\text{Q}$ 04'40	10.25052 AU
direct	4153 Mar 18 14:41	17° $\text{Q}$ 18'00		morning rise	4158 Oct 16 08:00	9° $\text{Q}$ 17'58	
evening set	4153 Jun 29 21:54	25° $\text{Q}$ 19'44		retrograde	4159 Jan 26 08:17	17° $\text{Q}$ 06'15	
conjunction	4153 Jul 17 22:28	27° $\text{Q}$ 38'26	0°-33'-15	opposition	4159 Apr 03 04:40	13° $\text{Q}$ 41'49	2°21'28
minimum elong	4153 Jul 17 22:30	27° $\text{Q}$ 38'27	0°33'17	min. Earth dist.	4159 Apr 03 02:47	13° $\text{Q}$ 42'12	8.29294 AU
max. Earth dist.	4153 Jul 18 00:27	27° $\text{Q}$ 39'04	10.10810 AU	direct	4159 Jun 10 20:24	10° $\text{Q}$ 13'16	
morning rise	4153 Aug 05 01:00	29° $\text{Q}$ 57'45		evening set	4159 Sep 25 01:34	18° $\text{Q}$ 14'44	
	4153 Aug 05 08:07	0° $\text{Q}$					
retrograde	4153 Nov 18 14:49	8° $\text{Q}$ 09'49		conjunction	4159 Oct 12 17:36	20° $\text{Q}$ 27'35	2°00'39
opposition	4154 Jan 24 21:31	4° $\text{Q}$ 40'51	0°-21'-59	minimum elong	4159 Oct 12 17:34	20° $\text{Q}$ 27'34	2°00'40
min. Earth dist.	4154 Jan 24 19:51	4° $\text{Q}$ 41'12	8.09618 AU	max. Earth dist.	4159 Oct 12 19:30	20° $\text{Q}$ 28'11	10.33653 AU
direct	4154 Apr 01 16:43	1° $\text{Q}$ 12'47		morning rise	4159 Oct 30 05:32	22° $\text{Q}$ 39'13	
evening set	4154 Jul 14 16:59	9° $\text{Q}$ 18'45			4160 Jan 20 11:47	0° $\text{ML}$	
				retrograde	4160 Feb 08 14:03	0° $\text{ML}$ 20'00	
conjunction	4154 Aug 01 19:30	11° $\text{Q}$ 38'15	0°-1'-58		4160 Feb 27 18:26	30° $\text{R}$ Q	
minimum elong	4154 Aug 01 19:31	11° $\text{Q}$ 38'16	0°01'59	opposition	4160 Apr 15 16:05	26° $\text{Q}$ 56'55	2°35'23
behind sun begin	4154 Aug 01 12:10	11° $\text{Q}$ 35'55		min. Earth dist.	4160 Apr 15 15:01	26° $\text{Q}$ 57'08	8.38478 AU
behind sun end	4154 Aug 02 02:53	11° $\text{Q}$ 40'37		direct	4160 Jun 23 19:34	23° $\text{Q}$ 29'08	
					4160 Sep 26 04:33	0° $\text{ML}$	



evening set	4160 Oct 07 23:03	1° $\mathbb{M}$ 24'50		conjunction	4167 Jan 07 10:09	16° $\mathfrak{Z}$ 48'05	0°57'05
				minimum elong	4167 Jan 07 10:11	16° $\mathfrak{Z}$ 48'05	0°57'05
conjunction	4160 Oct 25 10:53	3° $\mathbb{M}$ 35'12	2°08'45	max. Earth dist.	4167 Jan 07 07:18	16° $\mathfrak{Z}$ 47'14	10.94111 AU
minimum elong	4160 Oct 25 10:52	3° $\mathbb{M}$ 35'12	2°08'46	morning rise	4167 Jan 24 03:18	18° $\mathfrak{Z}$ 46'50	
max. Earth dist.	4160 Oct 25 11:47	3° $\mathbb{M}$ 35'29	10.43256 AU	retrograde	4167 May 04 05:30	25° $\mathfrak{Z}$ 50'12	
morning rise	4160 Nov 11 18:31	5° $\mathbb{M}$ 44'17		opposition	4167 Jul 12 23:56	22° $\mathfrak{Z}$ 32'33	0°55'03
retrograde	4161 Feb 20 13:52	13° $\mathbb{M}$ 17'30		min. Earth dist.	4167 Jul 13 01:50	22° $\mathfrak{Z}$ 32'12	8.96124 AU
opposition	4161 Apr 28 22:59	9° $\mathbb{M}$ 55'43	2°40'58	direct	4167 Sep 21 23:06	19° $\mathfrak{Z}$ 12'11	
min. Earth dist.	4161 Apr 28 22:22	9° $\mathbb{M}$ 55'50	8.48403 AU	evening set	4168 Jan 02 07:12	26° $\mathfrak{Z}$ 22'11	
direct	4161 Jul 07 13:17	6° $\mathbb{M}$ 28'56					
evening set	4161 Oct 21 11:00	14° $\mathbb{M}$ 17'48		conjunction	4168 Jan 19 01:19	28° $\mathfrak{Z}$ 20'49	0°32'19
	4161 Oct 27 05:20	15° $\mathbb{M}$		minimum elong	4168 Jan 19 01:20	28° $\mathfrak{Z}$ 20'50	0°32'20
				max. Earth dist.	4168 Jan 18 22:49	28° $\mathfrak{Z}$ 20'05	10.97617 AU
conjunction	4161 Nov 07 18:57	16° $\mathbb{M}$ 25'45	2°10'11		4168 Feb 02 00:33	0° $\approx$	
minimum elong	4161 Nov 07 18:57	16° $\mathbb{M}$ 25'45	2°10'12	morning rise	4168 Feb 04 17:47	0° $\approx$ 19'02	
max. Earth dist.	4161 Nov 07 19:09	16° $\mathbb{M}$ 25'49	10.53352 AU	retrograde	4168 May 15 04:21	7° $\approx$ 22'00	
morning rise	4161 Nov 24 22:44	18° $\mathbb{M}$ 32'24		opposition	4168 Jul 24 06:39	4° $\approx$ 04'11	0°23'50
retrograde	4162 Mar 05 06:39	25° $\mathbb{M}$ 58'19		min. Earth dist.	4168 Jul 24 08:31	4° $\approx$ 03'50	8.98635 AU
opposition	4162 May 12 01:10	22° $\mathbb{M}$ 37'43	2°38'29	direct	4168 Oct 03 03:21	0° $\approx$ 44'30	
min. Earth dist.	4162 May 12 00:27	22° $\mathbb{M}$ 37'51	8.58543 AU	evening set	4169 Jan 12 21:10	7° $\approx$ 51'15	
direct	4162 Jul 21 02:08	19° $\mathbb{M}$ 12'03					
evening set	4162 Nov 03 13:34	26° $\mathbb{M}$ 53'33		conjunction	4169 Jan 29 14:18	9° $\approx$ 49'27	0°06'25
				minimum elong	4169 Jan 29 14:18	9° $\approx$ 49'27	0°06'26
conjunction	4162 Nov 20 18:05	28° $\mathbb{M}$ 59'13	2°05'19	behind sun begin	4169 Jan 29 07:42	9° $\approx$ 47'31	
minimum elong	4162 Nov 20 18:06	28° $\mathbb{M}$ 59'13	2°05'19	behind sun end	4169 Jan 29 20:53	9° $\approx$ 51'23	
max. Earth dist.	4162 Nov 20 18:17	28° $\mathbb{M}$ 59'17	10.63419 AU	max. Earth dist.	4169 Jan 29 11:32	9° $\approx$ 48'40	10.99150 AU
	4162 Nov 29 00:25	0° $\mathfrak{A}$		morning rise	4169 Feb 15 06:33	11° $\approx$ 47'26	
morning rise	4162 Dec 07 18:26	1° $\mathfrak{A}$ 03'39			4169 Mar 16 19:40	15° $\approx$	
retrograde	4163 Mar 17 18:35	8° $\mathfrak{A}$ 22'51		desc. node	4169 Apr 30 22:17	18° $\approx$ 17'32	
opposition	4163 May 24 22:43	5° $\mathfrak{A}$ 03'16	2°28'36	retrograde	4169 May 27 04:40	18° $\approx$ 51'23	
min. Earth dist.	4163 May 24 22:00	5° $\mathfrak{A}$ 03'25	8.68391 AU	opposition	4169 Aug 05 12:39	15° $\approx$ 33'08	0°-8'-13
direct	4163 Aug 03 08:45	1° $\mathfrak{A}$ 38'48		min. Earth dist.	4169 Aug 05 15:17	15° $\approx$ 32'39	8.99169 AU
evening set	4163 Nov 16 07:01	9° $\mathfrak{A}$ 12'45			4169 Aug 13 00:22	15° $\mathfrak{R}$ $\approx$	
				direct	4169 Oct 15 04:58	12° $\approx$ 13'54	
conjunction	4163 Dec 03 08:36	11° $\mathfrak{A}$ 16'23	1°54'44		4169 Dec 13 23:33	15° $\approx$	
minimum elong	4163 Dec 03 08:37	11° $\mathfrak{A}$ 16'23	1°54'44	evening set	4170 Jan 24 10:04	19° $\approx$ 18'42	
max. Earth dist.	4163 Dec 03 08:57	11° $\mathfrak{A}$ 16'29	10.72968 AU				
morning rise	4163 Dec 20 06:07	13° $\mathfrak{A}$ 18'51		conjunction	4170 Feb 10 02:23	21° $\approx$ 16'45	0°-19'-48
retrograde	4164 Mar 29 03:26	20° $\mathfrak{A}$ 32'13		minimum elong	4170 Feb 10 02:22	21° $\approx$ 16'45	0°19'49
opposition	4164 Jun 05 16:07	17° $\mathfrak{A}$ 13'29	2°12'13	max. Earth dist.	4170 Feb 09 22:38	21° $\approx$ 15'39	10.98697 AU
min. Earth dist.	4164 Jun 05 16:08	17° $\mathfrak{A}$ 13'29	8.77487 AU	morning rise	4170 Feb 26 18:53	23° $\approx$ 14'51	
direct	4164 Aug 15 07:27	13° $\mathfrak{A}$ 50'10			4170 May 18 11:03	0° $\mathfrak{H}$	
evening set	4164 Nov 27 16:08	21° $\mathfrak{A}$ 16'48		retrograde	4170 Jun 08 04:47	0° $\mathfrak{H}$ 21'10	
					4170 Jun 29 04:53	30° $\mathfrak{R}$ $\approx$	
conjunction	4164 Dec 14 15:09	23° $\mathfrak{A}$ 18'42	1°39'14	opposition	4170 Aug 17 19:04	27° $\approx$ 02'14	0°-39'-58
minimum elong	4164 Dec 14 15:12	23° $\mathfrak{A}$ 18'43	1°39'14	min. Earth dist.	4170 Aug 17 22:03	27° $\approx$ 01'41	8.97741 AU
max. Earth dist.	4164 Dec 14 14:36	23° $\mathfrak{A}$ 18'32	10.81538 AU	direct	4170 Oct 27 04:38	23° $\approx$ 43'15	
morning rise	4164 Dec 31 10:40	25° $\mathfrak{A}$ 19'35			4171 Jan 29 02:23	0° $\mathfrak{H}$	
	4165 Feb 14 04:40	0° $\mathfrak{Z}$		evening set	4171 Feb 04 23:03	0° $\mathfrak{H}$ 47'24	
retrograde	4165 Apr 10 05:27	2° $\mathfrak{Z}$ 28'12					
	4165 Jun 07 01:30	30° $\mathfrak{R}$ $\mathfrak{A}$		conjunction	4171 Feb 21 15:02	2° $\mathfrak{H}$ 45'37	0°-45'-13
opposition	4165 Jun 18 05:37	29° $\mathfrak{A}$ 10'04	1°50'24	minimum elong	4171 Feb 21 15:01	2° $\mathfrak{H}$ 45'36	0°45'15
min. Earth dist.	4165 Jun 18 06:55	29° $\mathfrak{A}$ 09'49	8.85380 AU	max. Earth dist.	4171 Feb 21 11:38	2° $\mathfrak{H}$ 44'36	10.96295 AU
direct	4165 Aug 28 01:10	25° $\mathfrak{A}$ 47'49		morning rise	4171 Mar 10 07:59	4° $\mathfrak{H}$ 44'07	
	4165 Nov 11 08:34	0° $\mathfrak{Z}$		retrograde	4171 Jun 20 09:03	11° $\mathfrak{H}$ 54'13	
evening set	4165 Dec 09 18:19	3° $\mathfrak{Z}$ 07'53		opposition	4171 Aug 30 02:32	8° $\mathfrak{H}$ 34'22	-1°-10'-16
				min. Earth dist.	4171 Aug 30 04:54	8° $\mathfrak{H}$ 33'55	8.94415 AU
conjunction	4165 Dec 26 15:12	5° $\mathfrak{Z}$ 08'20	1°19'42	direct	4171 Nov 08 06:13	5° $\mathfrak{H}$ 15'25	
minimum elong	4165 Dec 26 15:15	5° $\mathfrak{Z}$ 08'21	1°19'42	evening set	4172 Feb 16 13:52	12° $\mathfrak{H}$ 20'15	
max. Earth dist.	4165 Dec 26 12:56	5° $\mathfrak{Z}$ 07'40	10.88696 AU				
morning rise	4166 Jan 12 09:20	7° $\mathfrak{Z}$ 07'59		conjunction	4172 Mar 04 06:01	14° $\mathfrak{H}$ 18'59	-1°-8'-57
retrograde	4166 Apr 22 05:24	14° $\mathfrak{Z}$ 13'13		minimum elong	4172 Mar 04 05:59	14° $\mathfrak{H}$ 18'58	1°08'59
opposition	4166 Jun 30 15:49	10° $\mathfrak{Z}$ 55'28	1°24'18	max. Earth dist.	4172 Mar 04 03:45	14° $\mathfrak{H}$ 18'18	10.92041 AU
min. Earth dist.	4166 Jun 30 17:53	10° $\mathfrak{Z}$ 55'05	8.91673 AU	morning rise	4172 Mar 20 23:39	16° $\mathfrak{H}$ 18'12	
direct	4166 Sep 09 15:04	7° $\mathfrak{Z}$ 34'12		retrograde	4172 Jul 01 18:10	23° $\mathfrak{H}$ 33'17	
evening set	4166 Dec 21 14:53	14° $\mathfrak{Z}$ 48'42		opposition	4172 Sep 10 11:42	20° $\mathfrak{H}$ 12'22	-1°-38'00
				min. Earth dist.	4172 Sep 10 13:10	20° $\mathfrak{H}$ 12'06	8.89317 AU



direct	4172 Nov 19 05:51	16° $\text{K}$ 53'18		evening set	4179 May 13 07:24	8° $\text{II}$ 38'22	
evening set	4173 Feb 27 07:55	24° $\text{K}$ 00'09					
conjunction	4173 Mar 16 00:34	25° $\text{K}$ 59'43	-1°-30'-4	conjunction	4179 May 30 17:30	10° $\text{II}$ 49'55	-1°-54'-48
minimum elong	4173 Mar 16 00:31	25° $\text{K}$ 59'43	1°30'05	minimum elong	4179 May 30 17:32	10° $\text{II}$ 49'56	1°54'50
max. Earth dist.	4173 Mar 15 22:30	25° $\text{K}$ 59'06	10.86092 AU	max. Earth dist.	4179 May 30 18:26	10° $\text{II}$ 50'13	10.31846 AU
morning rise	4173 Apr 01 19:27	28° $\text{K}$ 00'02		morning rise	4179 Jun 17 08:03	13° $\text{II}$ 02'51	
	4173 Apr 19 08:41	0° $\text{Y}$		retrograde	4179 Oct 01 20:34	21° $\text{II}$ 07'17	
retrograde	4173 Jul 14 07:07	5° $\text{Y}$ 21'11		opposition	4179 Dec 09 14:56	17° $\text{II}$ 39'00	-2°-12'-25
opposition	4173 Sep 22 23:45	1° $\text{Y}$ 59'06	-2°-2'00	min. Earth dist.	4179 Dec 09 13:36	17° $\text{II}$ 39'16	8.27709 AU
min. Earth dist.	4173 Sep 23 01:05	1° $\text{Y}$ 58'51	8.82627 AU	direct	4180 Feb 14 12:47	14° $\text{II}$ 14'44	
	4173 Oct 21 04:58	30° $\text{R}$ $\text{K}$		evening set	4180 May 26 04:15	22° $\text{II}$ 02'12	
direct	4173 Dec 01 06:56	28° $\text{K}$ 39'43		conjunction	4180 Jun 12 19:08	24° $\text{II}$ 16'17	-1°-37'-17
	4174 Jan 10 06:56	0° $\text{Y}$		minimum elong	4180 Jun 12 19:11	24° $\text{II}$ 16'18	1°37'18
evening set	4174 Mar 11 06:24	5° $\text{Y}$ 49'53		max. Earth dist.	4180 Jun 12 20:40	24° $\text{II}$ 16'46	10.23738 AU
				morning rise	4180 Jun 30 14:07	26° $\text{II}$ 31'38	
conjunction	4174 Mar 28 00:00	7° $\text{Y}$ 50'39	-1°-47'-38		4180 Jul 30 01:17	0° $\text{S}$	
minimum elong	4174 Mar 27 23:58	7° $\text{Y}$ 50'38	1°47'39	retrograde	4180 Oct 15 01:04	4° $\text{S}$ 40'38	
max. Earth dist.	4174 Mar 27 21:40	7° $\text{Y}$ 49'56	10.78673 AU	opposition	4180 Dec 22 08:45	1° $\text{S}$ 11'59	-1°-47'-8
morning rise	4174 Apr 13 20:45	9° $\text{Y}$ 52'21		min. Earth dist.	4180 Dec 22 07:09	1° $\text{S}$ 12'18	8.20296 AU
retrograde	4174 Jul 27 01:48	17° $\text{Y}$ 20'29			4181 Jan 06 11:49	30° $\text{R}$ $\text{II}$	
opposition	4174 Oct 05 15:19	13° $\text{Y}$ 57'12	-2°-21'-10	direct	4181 Feb 27 02:56	27° $\text{II}$ 46'41	
min. Earth dist.	4174 Oct 05 16:45	13° $\text{Y}$ 56'56	8.74602 AU		4181 Apr 18 06:05	0° $\text{S}$	
direct	4174 Dec 13 11:53	10° $\text{Y}$ 37'19		evening set	4181 Jun 09 09:20	5° $\text{S}$ 40'46	
evening set	4175 Mar 23 10:35	17° $\text{Y}$ 51'57					
				conjunction	4181 Jun 27 04:48	7° $\text{S}$ 57'08	-1°-14'-3
conjunction	4175 Apr 09 06:00	19° $\text{Y}$ 54'16	-2°00'-45	minimum elong	4181 Jun 27 04:51	7° $\text{S}$ 57'09	1°14'05
minimum elong	4175 Apr 09 05:59	19° $\text{Y}$ 54'16	2°00'45	max. Earth dist.	4181 Jun 27 07:25	7° $\text{S}$ 57'58	10.17190 AU
max. Earth dist.	4175 Apr 09 04:02	19° $\text{Y}$ 53'40	10.70078 AU	morning rise	4181 Jul 15 03:38	10° $\text{S}$ 14'32	
morning rise	4175 Apr 26 05:11	21° $\text{Y}$ 57'44		retrograde	4181 Oct 29 09:05	18° $\text{S}$ 26'22	
retrograde	4175 Aug 09 01:50	29° $\text{Y}$ 33'27		opposition	4182 Jan 05 05:51	14° $\text{S}$ 57'35	-1°-15'-19
opposition	4175 Oct 18 10:49	26° $\text{Y}$ 08'57	-2°-34'-25	min. Earth dist.	4182 Jan 05 03:30	14° $\text{S}$ 58'04	8.14656 AU
min. Earth dist.	4175 Oct 18 11:57	26° $\text{Y}$ 08'44	8.65565 AU	direct	4182 Mar 12 21:58	11° $\text{S}$ 31'19	
direct	4175 Dec 25 20:38	22° $\text{Y}$ 48'24		evening set	4182 Jun 23 21:33	19° $\text{S}$ 31'10	
	4176 Apr 02 17:12	0° $\text{S}$					
evening set	4176 Apr 03 21:30	0° $\text{S}$ 08'31		conjunction	4182 Jul 11 20:54	21° $\text{S}$ 49'19	0°-46'-18
				minimum elong	4182 Jul 11 20:56	21° $\text{S}$ 49'20	0°46'19
conjunction	4176 Apr 20 19:39	2° $\text{S}$ 12'46	-2°-8'-35	max. Earth dist.	4182 Jul 12 00:32	21° $\text{S}$ 50'29	10.12593 AU
minimum elong	4176 Apr 20 19:39	2° $\text{S}$ 12'46	2°08'36	morning rise	4182 Jul 29 22:34	24° $\text{S}$ 08'13	
max. Earth dist.	4176 Apr 20 19:04	2° $\text{S}$ 12'35	10.60653 AU		4182 Sep 21 11:34	0° $\text{Q}$	
morning rise	4176 May 07 21:47	4° $\text{S}$ 18'17		retrograde	4182 Nov 12 18:37	2° $\text{Q}$ 20'53	
retrograde	4176 Aug 21 08:42	12° $\text{S}$ 01'52			4183 Jan 05 04:06	30° $\text{R}$ $\text{S}$	
opposition	4176 Oct 30 10:45	8° $\text{S}$ 36'10	-2°-40'-47	opposition	4183 Jan 19 05:05	28° $\text{S}$ 52'14	0°-38'-45
min. Earth dist.	4176 Oct 30 10:47	8° $\text{S}$ 36'10	8.55886 AU	min. Earth dist.	4183 Jan 19 02:02	28° $\text{S}$ 52'51	8.11121 AU
direct	4177 Jan 06 10:43	5° $\text{S}$ 14'51		direct	4183 Mar 26 22:35	25° $\text{S}$ 25'05	
evening set	4177 Apr 16 16:14	12° $\text{S}$ 41'14			4183 Jun 09 08:41	0° $\text{Q}$	
				evening set	4183 Jul 08 15:30	3° $\text{Q}$ 29'33	
conjunction	4177 May 03 17:46	14° $\text{S}$ 47'44	-2°-10'-29				
minimum elong	4177 May 03 17:47	14° $\text{S}$ 47'44	2°10'30	conjunction	4183 Jul 26 17:29	5° $\text{Q}$ 48'48	0°-15'-38
max. Earth dist.	4177 May 03 18:11	14° $\text{S}$ 47'52	10.50810 AU	minimum elong	4183 Jul 26 17:30	5° $\text{Q}$ 48'48	0°15'40
	4177 May 05 09:11	15° $\text{S}$		behind sun begin	4183 Jul 26 16:38	5° $\text{Q}$ 48'32	
morning rise	4177 May 20 23:28	16° $\text{S}$ 55'35		behind sun end	4183 Jul 26 18:22	5° $\text{Q}$ 49'05	
retrograde	4177 Sep 03 23:30	24° $\text{S}$ 46'52		max. Earth dist.	4183 Jul 26 21:34	5° $\text{Q}$ 50'07	10.10202 AU
opposition	4177 Nov 12 15:24	21° $\text{S}$ 20'06	-2°-39'-29	morning rise	4183 Aug 13 20:34	8° $\text{Q}$ 08'26	
min. Earth dist.	4177 Nov 12 14:29	21° $\text{S}$ 20'17	8.46011 AU		4183 Oct 19 11:26	15° $\text{Q}$	
direct	4178 Jan 19 04:50	17° $\text{S}$ 57'54		retrograde	4183 Nov 27 02:45	16° $\text{Q}$ 19'52	
evening set	4178 Apr 29 19:26	25° $\text{S}$ 31'08			4184 Jan 05 01:49	15° $\text{R}$ $\text{Q}$	
				asc. node	4184 Jan 30 03:42	13° $\text{Q}$ 06'42	
conjunction	4178 May 17 00:58	27° $\text{S}$ 40'06	-2°-5'-57	opposition	4184 Feb 02 05:10	12° $\text{Q}$ 51'37	0°00'19
minimum elong	4178 May 17 01:00	27° $\text{S}$ 40'06	2°05'59	min. Earth dist.	4184 Feb 02 01:56	12° $\text{Q}$ 52'17	8.09869 AU
max. Earth dist.	4178 May 17 01:49	27° $\text{S}$ 40'22	10.41037 AU	direct	4184 Apr 09 02:50	9° $\text{Q}$ 23'43	
morning rise	4178 Jun 03 10:55	29° $\text{S}$ 50'28			4184 Jul 01 20:08	15° $\text{Q}$	
	4178 Jun 04 17:59	0° $\text{II}$		evening set	4184 Jul 22 12:46	17° $\text{Q}$ 31'21	
retrograde	4178 Sep 17 20:02	7° $\text{II}$ 48'51					
opposition	4178 Nov 26 00:54	4° $\text{II}$ 21'13	-2°-30'-2	conjunction	4184 Aug 09 15:48	19° $\text{Q}$ 50'54	0°16'05
min. Earth dist.	4178 Nov 25 23:33	4° $\text{II}$ 21'29	8.36448 AU	minimum elong	4184 Aug 09 15:47	19° $\text{Q}$ 50'54	0°16'04
direct	4179 Feb 01 04:46	0° $\text{II}$ 57'59		max. Earth dist.	4184 Aug 09 19:27	19° $\text{Q}$ 52'05	10.10101 AU



morning rise	4184 Aug 27 18:45	22°♏10'28		retrograde	4191 Feb 28 08:01	20°♌53'16	
	4184 Nov 21 22:03	0°♐		opposition	4191 May 06 21:16	17°♌32'01	2°40'29
retrograde	4184 Dec 10 08:35	0°♐18'51		min. Earth dist.	4191 May 06 21:07	17°♌32'03	8.53498 AU
	4184 Dec 28 19:21	30°♐♏			4191 Jun 12 10:52	15°♐♌	
opposition	4185 Feb 15 05:13	26°♏25'115	0°39'24	direct	4191 Jul 15 17:06	14°♌05'39	
min. Earth dist.	4185 Feb 15 02:40	26°♏25'147	8.10894 AU		4191 Aug 17 18:33	15°♌	
direct	4185 Apr 23 09:08	23°♏22'47		evening set	4191 Oct 29 10:13	21°♌50'37	
	4185 Jul 25 01:12	0°♐					
evening set	4185 Aug 06 10:37	1°♐31'59		conjunction	4191 Nov 15 16:16	23°♌57'21	2°08'07
				minimum elong	4191 Nov 15 16:17	23°♌57'21	2°08'08
conjunction	4185 Aug 24 13:06	3°♐51'04	0°46'43	max. Earth dist.	4191 Nov 15 16:11	23°♌57'20	10.58279 AU
minimum elong	4185 Aug 24 13:04	3°♐51'03	0°46'43	morning rise	4191 Dec 02 17:59	26°♌02'48	
max. Earth dist.	4185 Aug 24 15:33	3°♐51'51	10.12195 AU		4192 Jan 07 09:17	0°♐	
morning rise	4185 Sep 11 14:27	6°♐09'47		retrograde	4192 Mar 11 21:17	3°♐25'03	
retrograde	4185 Dec 24 10:58	14°♐13'43		opposition	4192 May 18 21:04	0°♐04'44	2°33'41
opposition	4186 Mar 01 03:59	10°♐46'59	1°15'56	min. Earth dist.	4192 May 18 21:43	0°♐04'37	8.63242 AU
min. Earth dist.	4186 Mar 01 02:25	10°♐47'19	8.14050 AU		4192 May 19 21:33	30°♐♌	
direct	4186 May 07 15:54	7°♐18'14		direct	4192 Jul 28 03:04	26°♌39'20	
evening set	4186 Aug 21 07:00	15°♐27'26			4192 Oct 01 23:21	0°♐	
				evening set	4192 Nov 10 07:35	4°♐16'46	
conjunction	4186 Sep 08 07:33	17°♐45'20	1°14'27				
minimum elong	4186 Sep 08 07:30	17°♐45'19	1°14'27	conjunction	4192 Nov 27 10:21	6°♐21'20	1°59'53
max. Earth dist.	4186 Sep 08 08:47	17°♐45'44	10.16334 AU	minimum elong	4192 Nov 27 10:22	6°♐21'21	1°59'54
morning rise	4186 Sep 26 05:58	20°♐02'33		max. Earth dist.	4192 Nov 27 09:13	6°♐21'00	10.67853 AU
retrograde	4187 Jan 07 08:35	28°♐00'48		morning rise	4192 Dec 14 09:13	8°♐24'44	
opposition	4187 Mar 15 00:27	24°♐35'08	1°47'42	retrograde	4193 Mar 24 06:01	15°♐40'42	
min. Earth dist.	4187 Mar 14 23:33	24°♐35'20	8.19189 AU	opposition	4193 May 31 16:05	12°♐21'09	2°19'58
direct	4187 May 21 23:14	21°♐06'24		min. Earth dist.	4193 May 31 16:45	12°♐21'02	8.72508 AU
evening set	4187 Sep 04 23:19	29°♐13'49		direct	4193 Aug 10 06:11	8°♐56'48	
	4187 Sep 11 02:13	0°♐		evening set	4193 Nov 22 20:07	16°♐26'46	
conjunction	4187 Sep 22 20:49	1°♐29'57	1°37'38	conjunction	4193 Dec 09 20:14	18°♐29'29	1°46'23
minimum elong	4187 Sep 22 20:46	1°♐29'56	1°37'38	minimum elong	4193 Dec 09 20:16	18°♐29'30	1°46'23
max. Earth dist.	4187 Sep 22 21:17	1°♐30'06	10.22365 AU	max. Earth dist.	4193 Dec 09 19:04	18°♐29'08	10.76745 AU
morning rise	4187 Oct 10 15:20	3°♐45'07		morning rise	4193 Dec 26 16:47	20°♐31'08	
retrograde	4188 Jan 20 23:04	11°♐36'45		retrograde	4194 Apr 05 10:19	27°♐41'49	
opposition	4188 Mar 27 17:58	8°♐12'12	2°12'54	opposition	4194 Jun 13 07:00	24°♐22'54	2°00'20
min. Earth dist.	4188 Mar 27 17:03	8°♐12'23	8.26102 AU	min. Earth dist.	4194 Jun 13 07:20	24°♐22'50	8.80880 AU
direct	4188 Jun 04 05:01	4°♐43'45		direct	4194 Aug 23 02:52	20°♐59'37	
evening set	4188 Sep 18 09:04	12°♐47'34		evening set	4194 Dec 05 00:59	28°♐22'37	
					4194 Dec 18 15:53	0°♐	
conjunction	4188 Oct 06 02:50	15°♐01'29	1°55'05	conjunction	4194 Dec 21 22:56	0°♐23'46	1°28'28
minimum elong	4188 Oct 06 02:47	15°♐01'28	1°55'05	minimum elong	4194 Dec 21 22:58	0°♐23'46	1°28'28
max. Earth dist.	4188 Oct 06 03:19	15°♐01'38	10.30013 AU	max. Earth dist.	4194 Dec 21 22:15	0°♐23'33	10.84565 AU
morning rise	4188 Oct 23 16:53	17°♐14'15		morning rise	4195 Jan 07 17:37	2°♐23'59	
retrograde	4189 Feb 02 07:51	24°♐58'40		retrograde	4195 Apr 17 12:31	9°♐30'37	
opposition	4189 Apr 10 07:37	21°♐35'14	2°30'22	opposition	4195 Jun 25 18:27	6°♐12'10	1°35'55
min. Earth dist.	4189 Apr 10 06:22	21°♐35'29	8.34434 AU	min. Earth dist.	4195 Jun 25 18:48	6°♐12'06	8.88018 AU
direct	4189 Jun 18 06:42	18°♐07'18		direct	4195 Sep 04 17:43	2°♐49'58	
evening set	4189 Oct 02 10:47	26°♐05'54		evening set	4195 Dec 16 23:34	10°♐06'46	
conjunction	4189 Oct 20 00:35	28°♐17'26	2°06'03				
minimum elong	4189 Oct 20 00:34	28°♐17'25	2°06'04	conjunction	4196 Jan 02 19:40	12°♐06'39	1°07'03
max. Earth dist.	4189 Oct 20 01:26	28°♐17'42	10.38874 AU	minimum elong	4196 Jan 02 19:42	12°♐06'40	1°07'04
	4189 Nov 02 16:28	0°♌		max. Earth dist.	4196 Jan 02 18:51	12°♐06'24	10.91006 AU
morning rise	4189 Nov 06 10:06	0°♌27'40		morning rise	4196 Jan 19 13:07	14°♐05'47	
retrograde	4190 Feb 15 11:39	8°♌04'29		retrograde	4196 Apr 28 12:09	21°♐09'42	
opposition	4190 Apr 23 16:42	4°♌42'10	2°39'33	opposition	4196 Jul 07 03:08	17°♐51'32	1°07'53
min. Earth dist.	4190 Apr 23 15:47	4°♌42'21	8.43733 AU	min. Earth dist.	4196 Jul 07 04:19	17°♐51'19	8.93654 AU
direct	4190 Jul 02 02:11	1°♌14'57		direct	4196 Sep 16 02:12	14°♐30'20	
evening set	4190 Oct 16 03:22	9°♌07'08		evening set	4196 Dec 27 17:13	21°♐41'58	
conjunction	4190 Nov 02 13:12	11°♌16'13	2°10'20	conjunction	4197 Jan 13 11:47	23°♐40'53	0°43'07
minimum elong	4190 Nov 02 13:12	11°♌16'13	2°10'21	minimum elong	4197 Jan 13 11:48	23°♐40'54	0°43'08
max. Earth dist.	4190 Nov 02 13:52	11°♌16'25	10.48462 AU	max. Earth dist.	4197 Jan 13 09:54	23°♐40'20	10.95822 AU
morning rise	4190 Nov 19 18:31	13°♌23'58		morning rise	4197 Jan 30 04:36	25°♐39'18	
	4190 Dec 03 05:01	15°♌			4197 Mar 12 21:52	0°♌	



retrograde	4197 May 10 08:57	2° $\approx$ 41'55		minimum elong	4203 Mar 24 01:38	2° $\Upsilon$ 50'46	1°40'15
	4197 Jul 11 05:51	30° $\Re$		max. Earth dist.	4203 Mar 24 00:55	2° $\Upsilon$ 50'33	10.85238 AU
opposition	4197 Jul 19 09:48	29° $\mathfrak{C}$ 23'50	0°37'24	morning rise	4203 Apr 09 21:17	4° $\Upsilon$ 51'26	
min. Earth dist.	4197 Jul 19 11:21	29° $\mathfrak{C}$ 23'32	8.97565 AU	retrograde	4203 Jul 22 18:08	12° $\Upsilon$ 15'00	
direct	4197 Sep 28 07:53	26° $\mathfrak{C}$ 03'30		opposition	4203 Oct 01 09:26	8° $\Upsilon$ 53'01	-2°-13'-4
	4197 Dec 09 23:42	0° $\approx$		min. Earth dist.	4203 Oct 01 09:44	8° $\Upsilon$ 52'58	8.81617 AU
evening set	4198 Jan 08 07:31	3° $\approx$ 11'11		direct	4203 Dec 09 12:17	5° $\Upsilon$ 34'12	
				evening set	4204 Mar 18 09:24	12° $\Upsilon$ 45'16	
conjunction	4198 Jan 25 00:55	5° $\approx$ 09'27	0°17'37				
minimum elong	4198 Jan 25 00:56	5° $\approx$ 09'27	0°17'38	conjunction	4204 Apr 04 03:52	14° $\Upsilon$ 46'27	-1°-55'-21
max. Earth dist.	4198 Jan 24 22:51	5° $\approx$ 08'50	10.98820 AU	minimum elong	4204 Apr 04 03:50	14° $\Upsilon$ 46'26	1°55'22
morning rise	4198 Feb 10 17:22	7° $\approx$ 07'25		max. Earth dist.	4204 Apr 04 03:17	14° $\Upsilon$ 46'16	10.77472 AU
retrograde	4198 May 22 08:05	14° $\approx$ 10'13		morning rise	4204 Apr 21 01:30	16° $\Upsilon$ 48'38	
opposition	4198 Jul 31 15:16	10° $\approx$ 51'59	0°05'37	retrograde	4204 Aug 03 15:21	24° $\Upsilon$ 19'18	
min. Earth dist.	4198 Jul 31 16:23	10° $\approx$ 51'47	8.99600 AU	opposition	4204 Oct 13 01:55	20° $\Upsilon$ 56'10	-2°-28'-59
desc. node	4198 Oct 05 18:51	7° $\approx$ 33'29		min. Earth dist.	4204 Oct 13 02:10	20° $\Upsilon$ 56'07	8.73231 AU
direct	4198 Oct 10 11:12	7° $\approx$ 32'25		direct	4204 Dec 20 16:20	17° $\Upsilon$ 36'47	
evening set	4199 Jan 19 19:57	14° $\approx$ 37'22		evening set	4205 Mar 30 16:20	24° $\Upsilon$ 52'46	
	4199 Jan 23 01:42	15° $\approx$					
conjunction	4199 Feb 05 12:38	16° $\approx$ 35'18	0°-8'-33	conjunction	4205 Apr 16 12:53	26° $\Upsilon$ 55'39	-2°-5'-36
minimum elong	4199 Feb 05 12:37	16° $\approx$ 35'18	0°08'34	minimum elong	4205 Apr 16 12:52	26° $\Upsilon$ 55'39	2°05'36
behind sun begin	4199 Feb 05 06:31	16° $\approx$ 33'31		max. Earth dist.	4205 Apr 16 11:24	26° $\Upsilon$ 55'12	10.68490 AU
behind sun end	4199 Feb 05 18:44	16° $\approx$ 37'06		morning rise	4205 May 03 13:19	28° $\Upsilon$ 59'44	
max. Earth dist.	4199 Feb 05 11:26	16° $\approx$ 34'58	10.99890 AU		4205 May 12 01:13	0° $\mathfrak{C}$	
morning rise	4199 Feb 22 04:52	18° $\approx$ 33'10		retrograde	4205 Aug 16 17:56	6° $\mathfrak{C}$ 38'03	
retrograde	4199 Jun 03 08:16	25° $\approx$ 37'35		opposition	4205 Oct 25 22:50	3° $\mathfrak{C}$ 13'43	-2°-38'-29
opposition	4199 Aug 12 20:43	22° $\approx$ 18'58	0°-26'-18	min. Earth dist.	4205 Oct 25 23:41	3° $\mathfrak{C}$ 13'33	8.63769 AU
min. Earth dist.	4199 Aug 12 21:16	22° $\approx$ 18'52	8.99691 AU		4205 Dec 22 01:52	30° $\Re$ $\Upsilon$	
direct	4199 Oct 22 10:27	19° $\approx$ 00'01		direct	4206 Jan 02 02:57	29° $\Upsilon$ 53'33	
evening set	4200 Jan 31 08:01	26° $\approx$ 03'32			4206 Jan 13 02:53	0° $\mathfrak{C}$	
				evening set	4206 Apr 12 06:18	7° $\mathfrak{C}$ 15'27	
conjunction	4200 Feb 17 00:09	28° $\approx$ 01'27	0°-34'-18	conjunction	4206 Apr 29 05:48	9° $\mathfrak{C}$ 20'25	-2°-10'-14
minimum elong	4200 Feb 17 00:08	28° $\approx$ 01'27	0°34'20	minimum elong	4206 Apr 29 05:48	9° $\mathfrak{C}$ 20'26	2°10'15
max. Earth dist.	4200 Feb 16 23:01	28° $\approx$ 01'07	10.98996 AU	max. Earth dist.	4206 Apr 29 04:01	9° $\mathfrak{C}$ 19'52	10.58643 AU
morning rise	4200 Mar 05 16:39	29° $\approx$ 59'32		morning rise	4206 May 16 09:41	11° $\mathfrak{C}$ 26'44	
	4200 Mar 05 18:17	0° $\mathfrak{H}$			4206 Jun 16 19:54	15° $\mathfrak{C}$	
retrograde	4200 Jun 15 11:22	7° $\mathfrak{H}$ 06'57		retrograde	4206 Aug 30 03:33	19° $\mathfrak{C}$ 12'54	
opposition	4200 Aug 25 02:52	3° $\mathfrak{H}$ 47'46	0°-57'-15	opposition	4206 Nov 08 00:26	15° $\mathfrak{C}$ 47'24	-2°-40'-44
min. Earth dist.	4200 Aug 25 03:46	3° $\mathfrak{H}$ 47'36	8.97840 AU	min. Earth dist.	4206 Nov 08 01:30	15° $\mathfrak{C}$ 47'11	8.53671 AU
direct	4200 Nov 03 09:23	0° $\mathfrak{H}$ 29'10			4206 Nov 18 06:00	15° $\Re$ $\mathfrak{C}$	
evening set	4201 Feb 11 21:24	7° $\mathfrak{H}$ 32'40		direct	4207 Jan 14 18:38	12° $\mathfrak{C}$ 26'16	
					4207 Mar 10 17:07	15° $\mathfrak{C}$	
conjunction	4201 Feb 28 13:14	9° $\mathfrak{H}$ 30'53	0°-58'-48	evening set	4207 Apr 25 04:26	19° $\mathfrak{C}$ 54'50	
minimum elong	4201 Feb 28 13:12	9° $\mathfrak{H}$ 30'52	0°58'50				
max. Earth dist.	4201 Feb 28 11:21	9° $\mathfrak{H}$ 30'19	10.96178 AU	conjunction	4207 May 12 07:49	22° $\mathfrak{C}$ 02'13	-2°-8'-40
morning rise	4201 Mar 17 06:26	11° $\mathfrak{H}$ 29'29		minimum elong	4207 May 12 07:51	22° $\mathfrak{C}$ 02'13	2°08'42
retrograde	4201 Jun 27 16:26	18° $\mathfrak{H}$ 41'09		max. Earth dist.	4207 May 12 06:50	22° $\mathfrak{C}$ 01'54	10.48436 AU
opposition	4201 Sep 06 10:26	15° $\mathfrak{H}$ 21'14	-1°-26'-7	morning rise	4207 May 29 15:40	24° $\mathfrak{C}$ 11'00	
min. Earth dist.	4201 Sep 06 11:50	15° $\mathfrak{H}$ 20'59	8.94116 AU		4207 Jul 24 07:57	0° $\mathfrak{H}$	
direct	4201 Nov 15 07:41	12° $\mathfrak{H}$ 02'46		retrograde	4207 Sep 12 19:24	2° $\mathfrak{H}$ 04'40	
evening set	4202 Feb 23 13:13	19° $\mathfrak{H}$ 07'35			4207 Nov 03 10:19	30° $\Re$ $\mathfrak{C}$	
				opposition	4207 Nov 21 06:36	28° $\mathfrak{C}$ 38'02	-2°-35'-6
conjunction	4202 Mar 12 05:18	21° $\mathfrak{H}$ 06'25	-1°-21'-5	min. Earth dist.	4207 Nov 21 07:06	28° $\mathfrak{C}$ 37'56	8.43487 AU
minimum elong	4202 Mar 12 05:15	21° $\mathfrak{H}$ 06'24	1°21'07	direct	4208 Jan 27 15:50	25° $\mathfrak{C}$ 15'48	
max. Earth dist.	4202 Mar 12 03:28	21° $\mathfrak{H}$ 05'52	10.91540 AU		4208 Apr 13 02:58	0° $\mathfrak{H}$	
morning rise	4202 Mar 28 23:32	23° $\mathfrak{H}$ 05'53		evening set	4208 May 07 11:15	2° $\mathfrak{H}$ 51'29	
	4202 Jun 18 10:11	0° $\Upsilon$					
retrograde	4202 Jul 10 01:28	0° $\Upsilon$ 23'01		conjunction	4208 May 24 19:08	5° $\mathfrak{H}$ 01'27	-2°00'-37
	4202 Jul 31 23:54	30° $\Re$ $\mathfrak{H}$		minimum elong	4208 May 24 19:10	5° $\mathfrak{H}$ 01'28	2°00'39
opposition	4202 Sep 18 20:26	27° $\mathfrak{H}$ 02'08	-1°-51'-45	max. Earth dist.	4208 May 24 19:14	5° $\mathfrak{H}$ 01'29	10.38434 AU
min. Earth dist.	4202 Sep 18 21:31	27° $\mathfrak{H}$ 01'56	8.88650 AU	morning rise	4208 Jun 11 07:17	7° $\mathfrak{H}$ 12'49	
direct	4202 Nov 27 09:01	23° $\mathfrak{H}$ 43'36		retrograde	4208 Sep 25 16:32	15° $\mathfrak{H}$ 13'12	
	4203 Feb 28 01:35	0° $\Upsilon$		opposition	4208 Dec 03 17:26	11° $\mathfrak{H}$ 45'35	-2°-21'-20
evening set	4203 Mar 07 08:40	0° $\Upsilon$ 50'58		min. Earth dist.	4208 Dec 03 17:01	11° $\mathfrak{H}$ 45'40	8.33777 AU
				direct	4209 Feb 08 19:50	8° $\mathfrak{H}$ 22'08	
conjunction	4203 Mar 24 01:40	2° $\Upsilon$ 50'47	-1°-40'-15	evening set	4209 May 21 02:50	16° $\mathfrak{H}$ 05'02	



conjunction	4209 Jun 07 15:26	18° $\Pi$ 17'38	-1°-46'-4	conjunction	4215 Sep 02 17:34	11° $\Pi$ 26'29	1°01'45
minimum elong	4209 Jun 07 15:29	18° $\Pi$ 17'39	1°46'06	minimum elong	4215 Sep 02 17:31	11° $\Pi$ 26'28	1°01'45
max. Earth dist.	4209 Jun 07 16:19	18° $\Pi$ 17'55	10.29190 AU	max. Earth dist.	4215 Sep 02 20:07	11° $\Pi$ 27'18	10.12770 AU
morning rise	4209 Jun 25 08:02	20° $\Pi$ 31'32		morning rise	4215 Sep 20 17:32	13° $\Pi$ 44'37	
retrograde	4209 Oct 09 19:16	28° $\Pi$ 37'26		retrograde	4216 Jan 02 04:06	21° $\Pi$ 46'04	
opposition	4209 Dec 17 08:35	25° $\Pi$ 09'03	-1°-59'-38	opposition	4216 Mar 08 20:51	18° $\Pi$ 19'15	1°33'21
min. Earth dist.	4209 Dec 17 07:27	25° $\Pi$ 09'17	8.25086 AU	min. Earth dist.	4216 Mar 08 18:34	18° $\Pi$ 19'43	8.15175 AU
direct	4210 Feb 22 05:01	21° $\Pi$ 44'21		direct	4216 May 15 15:02	14° $\Pi$ 49'54	
evening set	4210 Jun 04 03:04	29° $\Pi$ 34'14		evening set	4216 Aug 29 10:08	22° $\Pi$ 58'38	
	4210 Jun 07 13:01	0° $\mathfrak{E}$					
conjunction	4210 Jun 21 20:20	1° $\mathfrak{E}$ 49'19	-1°-25'-28	conjunction	4216 Sep 16 09:25	25° $\Pi$ 15'48	1°27'16
minimum elong	4210 Jun 21 20:23	1° $\mathfrak{E}$ 49'20	1°25'31	minimum elong	4216 Sep 16 09:22	25° $\Pi$ 15'47	1°27'16
max. Earth dist.	4210 Jun 21 21:18	1° $\mathfrak{E}$ 49'38	10.21232 AU	max. Earth dist.	4216 Sep 16 11:53	25° $\Pi$ 16'35	10.18005 AU
morning rise	4210 Jul 09 17:12	4° $\mathfrak{E}$ 05'34		morning rise	4216 Oct 04 05:48	27° $\Pi$ 32'06	
retrograde	4210 Oct 24 01:52	12° $\mathfrak{E}$ 15'19			4216 Oct 24 15:06	0° $\mathfrak{E}$	
opposition	4210 Dec 31 03:19	8° $\mathfrak{E}$ 46'28	-1°-30'-51	retrograde	4217 Jan 14 22:15	5° $\mathfrak{E}$ 27'19	
min. Earth dist.	4210 Dec 31 02:12	8° $\mathfrak{E}$ 46'42	8.17917 AU	opposition	4217 Mar 22 15:54	2° $\mathfrak{E}$ 01'38	2°01'51
direct	4211 Mar 07 20:00	5° $\mathfrak{E}$ 20'30		min. Earth dist.	4217 Mar 22 14:01	2° $\mathfrak{E}$ 02'01	8.21435 AU
evening set	4211 Jun 18 11:09	13° $\mathfrak{E}$ 16'52			4217 Apr 18 08:36	30° $\mathfrak{R}$ $\Pi$	
				direct	4217 May 29 20:54	28° $\Pi$ 32'31	
conjunction	4211 Jul 06 08:37	15° $\mathfrak{E}$ 34'03	0°-59'-46		4217 Jul 10 00:56	0° $\mathfrak{E}$	
minimum elong	4211 Jul 06 08:39	15° $\mathfrak{E}$ 34'04	0°59'48	evening set	4217 Sep 12 23:05	6° $\mathfrak{E}$ 38'25	
max. Earth dist.	4211 Jul 06 09:34	15° $\mathfrak{E}$ 34'21	10.15012 AU				
morning rise	4211 Jul 24 09:02	17° $\mathfrak{E}$ 52'10		conjunction	4217 Sep 30 18:51	8° $\mathfrak{E}$ 53'33	1°47'32
retrograde	4211 Nov 07 10:00	26° $\mathfrak{E}$ 03'57		minimum elong	4217 Sep 30 18:48	8° $\mathfrak{E}$ 53'32	1°47'33
opposition	4212 Jan 14 00:54	22° $\mathfrak{E}$ 34'56	0°-56'-24	max. Earth dist.	4217 Sep 30 20:46	8° $\mathfrak{E}$ 54'09	10.25135 AU
min. Earth dist.	4212 Jan 13 23:52	22° $\mathfrak{E}$ 35'09	8.12681 AU	morning rise	4217 Oct 18 11:04	11° $\mathfrak{E}$ 07'36	
direct	4212 Mar 20 18:05	19° $\mathfrak{E}$ 07'49		retrograde	4218 Jan 28 10:29	18° $\mathfrak{E}$ 55'45	
evening set	4212 Jul 02 01:42	27° $\mathfrak{E}$ 09'43		opposition	4218 Apr 05 07:25	15° $\mathfrak{E}$ 31'22	2°23'04
				min. Earth dist.	4218 Apr 05 06:15	15° $\mathfrak{E}$ 31'35	8.29385 AU
conjunction	4212 Jul 20 02:23	29° $\mathfrak{E}$ 28'26	0°-30'-20	direct	4218 Jun 12 23:45	12° $\mathfrak{E}$ 02'46	
minimum elong	4212 Jul 20 02:24	29° $\mathfrak{E}$ 28'26	0°30'22	evening set	4218 Sep 27 04:56	20° $\mathfrak{E}$ 04'13	
max. Earth dist.	4212 Jul 20 03:29	29° $\mathfrak{E}$ 28'47	10.10882 AU				
	4212 Jul 24 04:11	0° $\mathfrak{Q}$		conjunction	4218 Oct 14 20:39	22° $\mathfrak{E}$ 17'00	2°01'37
morning rise	4212 Aug 07 05:04	1° $\mathfrak{Q}$ 47'46		minimum elong	4218 Oct 14 20:37	22° $\mathfrak{E}$ 16'59	2°01'38
retrograde	4212 Nov 20 16:53	9° $\mathfrak{Q}$ 59'39		max. Earth dist.	4218 Oct 14 21:33	22° $\mathfrak{E}$ 17'17	10.33738 AU
opposition	4213 Jan 27 00:08	6° $\mathfrak{Q}$ 30'46	0°-18'-18	morning rise	4218 Nov 01 08:26	24° $\mathfrak{E}$ 28'33	
min. Earth dist.	4213 Jan 26 22:59	6° $\mathfrak{Q}$ 31'00	8.09687 AU		4218 Dec 22 23:44	0° $\mathfrak{M}$	
direct	4213 Apr 03 20:50	3° $\mathfrak{Q}$ 02'41		retrograde	4219 Feb 10 16:25	2° $\mathfrak{M}$ 09'12	
evening set	4213 Jul 16 20:51	11° $\mathfrak{Q}$ 08'49			4219 Apr 02 22:37	30° $\mathfrak{R}$ $\mathfrak{E}$	
asc. node	4213 Jul 22 10:31	11° $\mathfrak{Q}$ 51'20		opposition	4219 Apr 18 18:41	28° $\mathfrak{E}$ 46'08	2°36'10
				min. Earth dist.	4219 Apr 18 17:46	28° $\mathfrak{E}$ 46'19	8.38565 AU
conjunction	4213 Aug 03 23:28	13° $\mathfrak{Q}$ 28'20	0°01'05	direct	4219 Jun 26 22:28	25° $\mathfrak{E}$ 18'20	
minimum elong	4213 Aug 03 23:29	13° $\mathfrak{Q}$ 28'21	0°01'05		4219 Sep 13 03:53	0° $\mathfrak{M}$	
behind sun begin	4213 Aug 03 16:08	13° $\mathfrak{Q}$ 26'00		evening set	4219 Oct 11 02:04	3° $\mathfrak{M}$ 13'58	
behind sun end	4213 Aug 04 06:50	13° $\mathfrak{Q}$ 30'42					
max. Earth dist.	4213 Aug 04 01:03	13° $\mathfrak{Q}$ 28'47	10.09092 AU	conjunction	4219 Oct 28 13:41	5° $\mathfrak{M}$ 24'17	2°09'03
	4213 Aug 15 19:49	15° $\mathfrak{Q}$		minimum elong	4219 Oct 28 13:40	5° $\mathfrak{M}$ 24'16	2°09'04
morning rise	4213 Aug 22 02:53	15° $\mathfrak{Q}$ 48'05		max. Earth dist.	4219 Oct 28 14:13	5° $\mathfrak{M}$ 24'27	10.43336 AU
retrograde	4213 Dec 04 23:14	23° $\mathfrak{Q}$ 58'11		morning rise	4219 Nov 14 21:10	7° $\mathfrak{M}$ 33'18	
opposition	4214 Feb 09 23:57	20° $\mathfrak{Q}$ 29'44	0°21'02		4220 Feb 12 19:39	15° $\mathfrak{M}$	
min. Earth dist.	4214 Feb 09 22:16	20° $\mathfrak{Q}$ 30'04	8.09117 AU	retrograde	4220 Feb 23 15:17	15° $\mathfrak{M}$ 06'25	
direct	4214 Apr 18 01:56	17° $\mathfrak{Q}$ 00'56			4220 Mar 05 12:53	15° $\mathfrak{R}$ $\mathfrak{M}$	
evening set	4214 Jul 31 18:21	25° $\mathfrak{Q}$ 09'43		opposition	4220 May 01 01:35	11° $\mathfrak{M}$ 44'37	2°40'56
				min. Earth dist.	4220 May 01 00:26	11° $\mathfrak{M}$ 44'50	8.48475 AU
conjunction	4214 Aug 18 21:25	27° $\mathfrak{Q}$ 29'14	0°32'25	direct	4220 Jul 09 17:12	8° $\mathfrak{M}$ 17'51	
minimum elong	4214 Aug 18 21:23	27° $\mathfrak{Q}$ 29'13	0°32'25		4220 Oct 14 06:40	15° $\mathfrak{M}$	
max. Earth dist.	4214 Aug 18 23:39	27° $\mathfrak{Q}$ 29'57	10.09740 AU	evening set	4220 Oct 23 13:35	16° $\mathfrak{M}$ 06'36	
morning rise	4214 Sep 05 23:53	29° $\mathfrak{Q}$ 48'34					
	4214 Sep 07 12:09	0° $\mathfrak{M}$		conjunction	4220 Nov 09 21:27	18° $\mathfrak{M}$ 14'30	2°09'50
retrograde	4214 Dec 19 03:33	7° $\mathfrak{M}$ 55'06		minimum elong	4220 Nov 09 21:27	18° $\mathfrak{M}$ 14'30	2°09'51
opposition	4215 Feb 23 23:15	4° $\mathfrak{M}$ 27'20	0°59'04	max. Earth dist.	4220 Nov 09 22:13	18° $\mathfrak{M}$ 14'44	10.53419 AU
min. Earth dist.	4215 Feb 23 21:00	4° $\mathfrak{M}$ 27'47	8.10987 AU	morning rise	4220 Nov 27 00:59	20° $\mathfrak{M}$ 21'06	
direct	4215 May 02 08:13	0° $\mathfrak{M}$ 58'06		retrograde	4221 Mar 07 09:00	27° $\mathfrak{M}$ 46'59	
evening set	4215 Aug 15 15:43	9° $\mathfrak{M}$ 07'47		opposition	4221 May 14 03:47	24° $\mathfrak{M}$ 26'21	2°37'41
				min. Earth dist.	4221 May 14 02:32	24° $\mathfrak{M}$ 26'36	8.58599 AU
				direct	4221 Jul 23 05:28	21° $\mathfrak{M}$ 00'43	



evening set	4221 Nov 05 15:50	28° $\mathbb{M}$ 42'03		conjunction	4228 Feb 01 15:28	11° $\approx$ 36'04	0°03'35
	4221 Nov 16 08:44	0° $\mathbb{X}$		minimum elong	4228 Feb 01 15:28	11° $\approx$ 36'04	0°03'36
conjunction	4221 Nov 22 20:19	0° $\mathbb{X}$ 47'42	2°04'21	behind sun begin	4228 Feb 01 08:32	11° $\approx$ 34'02	
minimum elong	4221 Nov 22 20:20	0° $\mathbb{X}$ 47'42	2°04'21	behind sun end	4228 Feb 01 22:24	11° $\approx$ 38'05	
max. Earth dist.	4221 Nov 22 21:18	0° $\mathbb{X}$ 48'00	10.63476 AU	max. Earth dist.	4228 Feb 01 12:16	11° $\approx$ 35'09	10.99465 AU
morning rise	4221 Dec 09 20:27	2° $\mathbb{X}$ 52'05		morning rise	4228 Feb 18 07:49	13° $\approx$ 34'01	
retrograde	4222 Mar 19 22:06	10° $\mathbb{X}$ 11'16			4228 Mar 01 22:39	15° $\approx$	
opposition	4222 May 27 01:20	6° $\mathbb{X}$ 51'41	2°27'04	desc. node	4228 Mar 23 05:32	17° $\approx$ 11'44	
min. Earth dist.	4222 May 27 00:48	6° $\mathbb{X}$ 51'47	8.68443 AU	retrograde	4228 May 29 05:23	20° $\approx$ 37'55	
direct	4222 Aug 05 10:17	3° $\mathbb{X}$ 27'14		opposition	4228 Aug 07 15:07	17° $\approx$ 19'41	0°-11'-40
evening set	4222 Nov 18 09:08	11° $\mathbb{X}$ 01'01		min. Earth dist.	4228 Aug 07 17:55	17° $\approx$ 19'10	8.99488 AU
					4228 Sep 11 12:41	15° $\mathbb{R}$ $\approx$	
conjunction	4222 Dec 05 10:35	13° $\mathbb{X}$ 04'38	1°53'13	direct	4228 Oct 17 06:34	14° $\approx$ 00'31	
minimum elong	4222 Dec 05 10:37	13° $\mathbb{X}$ 04'39	1°53'12		4228 Nov 21 07:37	15° $\approx$	
max. Earth dist.	4222 Dec 05 10:54	13° $\mathbb{X}$ 04'44	10.73026 AU	evening set	4229 Jan 26 11:14	21° $\approx$ 05'05	
morning rise	4222 Dec 22 08:04	15° $\mathbb{X}$ 07'07		conjunction	4229 Feb 12 03:32	23° $\approx$ 03'05	0°-22'-34
retrograde	4223 Apr 01 04:39	22° $\mathbb{X}$ 20'26		minimum elong	4229 Feb 12 03:31	23° $\approx$ 03'04	0°22'35
opposition	4223 Jun 08 18:49	19° $\mathbb{X}$ 01'42	2°10'02	max. Earth dist.	4229 Feb 12 00:04	23° $\approx$ 02'03	10.99007 AU
min. Earth dist.	4223 Jun 08 19:15	19° $\mathbb{X}$ 01'38	8.77552 AU	morning rise	4229 Feb 28 20:04	25° $\approx$ 01'08	
direct	4223 Aug 18 09:37	15° $\mathbb{X}$ 38'25			4229 Apr 19 07:57	0° $\mathbb{H}$	
evening set	4223 Nov 30 18:06	23° $\mathbb{X}$ 04'55		retrograde	4229 Jun 10 06:36	2° $\mathbb{H}$ 07'29	
					4229 Aug 03 10:48	30° $\mathbb{R}$ $\approx$	
conjunction	4223 Dec 17 16:57	25° $\mathbb{X}$ 06'46	1°37'14	opposition	4229 Aug 19 21:18	28° $\approx$ 48'33	0°-43'-15
minimum elong	4223 Dec 17 16:59	25° $\mathbb{X}$ 06'47	1°37'14	min. Earth dist.	4229 Aug 19 23:42	28° $\approx$ 48'06	8.98041 AU
max. Earth dist.	4223 Dec 17 16:02	25° $\mathbb{X}$ 06'30	10.81627 AU	direct	4229 Oct 29 08:03	25° $\approx$ 29'39	
morning rise	4224 Jan 03 12:31	27° $\mathbb{X}$ 07'40			4230 Jan 14 22:30	0° $\mathbb{H}$	
	4224 Jan 29 05:08	0° $\mathbb{Z}$		evening set	4230 Feb 07 00:12	2° $\mathbb{H}$ 33'35	
retrograde	4224 Apr 12 07:18	4° $\mathbb{Z}$ 16'17		conjunction	4230 Feb 23 16:16	4° $\mathbb{H}$ 31'46	0°-47'-48
opposition	4224 Jun 20 08:23	0° $\mathbb{Z}$ 58'09	1°47'42	minimum elong	4230 Feb 23 16:14	4° $\mathbb{H}$ 31'45	0°47'50
min. Earth dist.	4224 Jun 20 09:21	0° $\mathbb{Z}$ 57'58	8.85499 AU	max. Earth dist.	4230 Feb 23 13:45	4° $\mathbb{H}$ 31'01	10.96573 AU
	4224 Jul 03 09:40	30° $\mathbb{R}$ $\mathbb{X}$		morning rise	4230 Mar 12 09:06	6° $\mathbb{H}$ 30'14	
direct	4224 Aug 30 05:15	27° $\mathbb{X}$ 35'56		retrograde	4230 Jun 22 11:56	13° $\mathbb{H}$ 40'21	
	4224 Oct 24 19:42	0° $\mathbb{Z}$		opposition	4230 Sep 01 04:36	10° $\mathbb{H}$ 20'31	-1°-13'-16
evening set	4224 Dec 11 20:03	4° $\mathbb{Z}$ 55'47		min. Earth dist.	4230 Sep 01 06:15	10° $\mathbb{H}$ 20'12	8.94676 AU
conjunction	4224 Dec 28 16:54	6° $\mathbb{Z}$ 56'13	1°17'19	direct	4230 Nov 10 07:17	7° $\mathbb{H}$ 01'41	
minimum elong	4224 Dec 28 16:56	6° $\mathbb{Z}$ 56'14	1°17'19	evening set	4231 Feb 18 15:06	14° $\mathbb{H}$ 06'19	
max. Earth dist.	4224 Dec 28 15:14	6° $\mathbb{Z}$ 55'43	10.88864 AU	conjunction	4231 Mar 07 07:12	16° $\mathbb{H}$ 05'01	-1°-11'-16
morning rise	4225 Jan 14 11:03	8° $\mathbb{Z}$ 55'50		minimum elong	4231 Mar 07 07:10	16° $\mathbb{H}$ 05'00	1°11'17
retrograde	4225 Apr 24 08:00	16° $\mathbb{Z}$ 01'02		max. Earth dist.	4231 Mar 07 05:06	16° $\mathbb{H}$ 04'23	10.92278 AU
opposition	4225 Jul 02 18:30	12° $\mathbb{Z}$ 43'14	1°21'12	morning rise	4231 Mar 24 00:49	18° $\mathbb{H}$ 04'13	
min. Earth dist.	4225 Jul 02 19:27	12° $\mathbb{Z}$ 43'03	8.91883 AU	retrograde	4231 Jul 04 20:03	25° $\mathbb{H}$ 19'20	
direct	4225 Sep 11 17:39	9° $\mathbb{Z}$ 22'03		opposition	4231 Sep 13 13:53	21° $\mathbb{H}$ 58'27	-1°-40'-36
evening set	4225 Dec 23 16:24	16° $\mathbb{Z}$ 36'13		min. Earth dist.	4231 Sep 13 15:21	21° $\mathbb{H}$ 58'10	8.89537 AU
conjunction	4226 Jan 09 11:44	18° $\mathbb{Z}$ 35'33	0°54'26	direct	4231 Nov 22 06:58	18° $\mathbb{H}$ 39'27	
minimum elong	4226 Jan 09 11:46	18° $\mathbb{Z}$ 35'34	0°54'27	evening set	4232 Mar 01 09:08	25° $\mathbb{H}$ 46'10	
max. Earth dist.	4226 Jan 09 10:09	18° $\mathbb{Z}$ 35'05	10.94366 AU	conjunction	4232 Mar 18 01:41	27° $\mathbb{H}$ 45'42	-1°-32'00
morning rise	4226 Jan 26 04:47	20° $\mathbb{Z}$ 34'17		minimum elong	4232 Mar 18 01:39	27° $\mathbb{H}$ 45'41	1°32'01
retrograde	4226 May 06 07:17	27° $\mathbb{Z}$ 37'33		max. Earth dist.	4232 Mar 17 23:01	27° $\mathbb{H}$ 44'54	10.86294 AU
opposition	4226 Jul 15 02:29	24° $\mathbb{Z}$ 19'53	0°51'42	morning rise	4232 Apr 03 20:44	29° $\mathbb{H}$ 45'59	
min. Earth dist.	4226 Jul 15 03:47	24° $\mathbb{Z}$ 19'38	8.96404 AU		4232 Apr 05 20:29	0° $\mathbb{Y}$	
direct	4226 Sep 24 01:16	20° $\mathbb{Z}$ 59'34		retrograde	4232 Jul 16 09:15	7° $\mathbb{Y}$ 07'11	
evening set	4227 Jan 04 08:40	28° $\mathbb{Z}$ 09'16		opposition	4232 Sep 25 01:52	3° $\mathbb{Y}$ 45'08	-2°-4'-5
	4227 Jan 20 00:17	0° $\approx$		min. Earth dist.	4232 Sep 25 03:44	3° $\mathbb{Y}$ 44'47	8.82814 AU
conjunction	4227 Jan 21 02:42	0° $\approx$ 07'50	0°29'31	direct	4232 Dec 03 08:47	0° $\mathbb{Y}$ 25'48	
minimum elong	4227 Jan 21 02:43	0° $\approx$ 07'51	0°29'32	evening set	4233 Mar 13 07:40	7° $\mathbb{Y}$ 35'50	
max. Earth dist.	4227 Jan 21 00:35	0° $\approx$ 07'13	10.97917 AU	conjunction	4233 Mar 30 01:20	9° $\mathbb{Y}$ 36'35	-1°-49'-5
morning rise	4227 Feb 06 19:08	2° $\approx$ 06'00		minimum elong	4233 Mar 30 01:18	9° $\mathbb{Y}$ 36'34	1°49'06
retrograde	4227 May 18 07:09	9° $\approx$ 08'53		max. Earth dist.	4233 Mar 29 22:56	9° $\mathbb{Y}$ 35'52	10.78841 AU
opposition	4227 Jul 27 09:09	5° $\approx$ 51'05	0°20'22	morning rise	4233 Apr 15 22:12	11° $\mathbb{Y}$ 38'18	
min. Earth dist.	4227 Jul 27 11:15	5° $\approx$ 50'41	8.98945 AU	retrograde	4233 Jul 29 02:41	19° $\mathbb{Y}$ 06'27	
direct	4227 Oct 06 05:11	2° $\approx$ 31'28		opposition	4233 Oct 07 17:08	15° $\mathbb{Y}$ 43'10	-2°-22'-38
evening set	4228 Jan 15 22:31	9° $\approx$ 37'56		min. Earth dist.	4233 Oct 07 18:40	15° $\mathbb{Y}$ 42'53	8.74753 AU



direct	4233 Dec 15 13:19	12° $\Upsilon$ 23'19		direct	4240 Mar 01 03:36	29° $\Pi$ 32'07	
evening set	4234 Mar 25 11:51	19° $\Upsilon$ 37'53			4240 Mar 23 12:53	0° $\Theta$	
				evening set	4240 Jun 11 10:50	7° $\Theta$ 26'17	
conjunction	4234 Apr 11 07:28	21° $\Upsilon$ 40'12	-2°-1'-40	conjunction	4240 Jun 29 06:38	9° $\Theta$ 42'42	-1°-11'-42
minimum elong	4234 Apr 11 07:26	21° $\Upsilon$ 40'12	2°01'40	minimum elong	4240 Jun 29 06:41	9° $\Theta$ 42'43	1°11'43
max. Earth dist.	4234 Apr 11 06:14	21° $\Upsilon$ 39'50	10.70206 AU	max. Earth dist.	4240 Jun 29 09:37	9° $\Theta$ 43'40	10.17097 AU
morning rise	4234 Apr 28 06:38	23° $\Upsilon$ 43'39		morning rise	4240 Jul 17 05:33	12° $\Theta$ 00'10	
	4234 Jul 01 18:44	0° $\mathcal{B}$		retrograde	4240 Oct 31 10:42	20° $\Theta$ 11'52	
retrograde	4234 Aug 11 03:24	1° $\mathcal{B}$ 19'24		opposition	4241 Jan 07 06:29	16° $\Theta$ 43'02	-1°-12'-12
	4234 Sep 21 05:56	30° $\mathcal{R}\Upsilon$		min. Earth dist.	4241 Jan 07 03:51	16° $\Theta$ 43'35	8.14542 AU
opposition	4234 Oct 20 12:29	27° $\Upsilon$ 54'53	-2°-35'-11	direct	4241 Mar 14 23:03	13° $\Theta$ 16'43	
min. Earth dist.	4234 Oct 20 13:01	27° $\Upsilon$ 54'46	8.65677 AU	evening set	4241 Jun 25 23:11	21° $\Theta$ 16'43	
direct	4234 Dec 27 23:02	24° $\Upsilon$ 34'22					
	4235 Mar 21 15:55	0° $\mathcal{B}$		conjunction	4241 Jul 13 22:42	23° $\Theta$ 34'55	0°-43'-40
evening set	4235 Apr 06 22:46	1° $\mathcal{B}$ 54'23		minimum elong	4241 Jul 13 22:44	23° $\Theta$ 34'55	0°43'42
				max. Earth dist.	4241 Jul 14 02:20	23° $\Theta$ 36'05	10.12472 AU
conjunction	4235 Apr 23 21:05	3° $\mathcal{B}$ 58'40	-2°-8'-55	morning rise	4241 Aug 01 00:23	25° $\Theta$ 53'51	
minimum elong	4235 Apr 23 21:04	3° $\mathcal{B}$ 58'40	2°08'56		4241 Sep 05 00:39	0° $\mathcal{O}$	
max. Earth dist.	4235 Apr 23 20:53	3° $\mathcal{B}$ 58'36	10.60744 AU	retrograde	4241 Nov 14 19:35	4° $\mathcal{O}$ 06'24	
morning rise	4235 May 10 23:17	6° $\mathcal{B}$ 04'12		opposition	4242 Jan 21 05:45	0° $\mathcal{O}$ 37'45	0°-35'-22
retrograde	4235 Aug 24 11:44	13° $\mathcal{B}$ 47'46		min. Earth dist.	4242 Jan 21 02:45	0° $\mathcal{O}$ 38'22	8.10995 AU
opposition	4235 Nov 02 12:16	10° $\mathcal{B}$ 22'03	-2°-40'-48		4242 Jan 28 23:01	30° $\mathcal{R}\Theta$	
min. Earth dist.	4235 Nov 02 11:54	10° $\mathcal{B}$ 22'08	8.55961 AU	direct	4242 Mar 28 23:16	27° $\Theta$ 10'33	
direct	4236 Jan 09 11:17	7° $\mathcal{B}$ 00'45			4242 May 25 00:46	0° $\mathcal{O}$	
evening set	4236 Apr 18 17:38	14° $\mathcal{B}$ 27'04		evening set	4242 Jul 10 17:17	5° $\mathcal{O}$ 15'13	
	4236 Apr 23 05:15	15° $\mathcal{B}$					
conjunction	4236 May 05 19:17	16° $\mathcal{B}$ 33'35	-2°-10'-13	conjunction	4242 Jul 28 19:16	7° $\mathcal{O}$ 34'30	0°-12'-53
minimum elong	4236 May 05 19:18	16° $\mathcal{B}$ 33'35	2°10'14	minimum elong	4242 Jul 28 19:17	7° $\mathcal{O}$ 34'30	0°12'55
max. Earth dist.	4236 May 05 19:04	16° $\mathcal{B}$ 33'31	10.50869 AU	behind sun begin	4242 Jul 28 14:55	7° $\mathcal{O}$ 33'07	
morning rise	4236 May 23 01:14	18° $\mathcal{B}$ 41'29		behind sun end	4242 Jul 28 23:39	7° $\mathcal{O}$ 35'54	
retrograde	4236 Sep 06 01:48	26° $\mathcal{B}$ 32'40		max. Earth dist.	4242 Jul 28 22:52	7° $\mathcal{O}$ 35'39	10.10089 AU
opposition	4236 Nov 14 16:41	23° $\mathcal{B}$ 05'54	-2°-38'-45	morning rise	4242 Aug 15 22:24	9° $\mathcal{O}$ 54'09	
min. Earth dist.	4236 Nov 14 16:13	23° $\mathcal{B}$ 06'00	8.46050 AU		4242 Sep 29 20:11	15° $\mathcal{O}$	
direct	4237 Jan 21 04:59	19° $\mathcal{B}$ 43'39		retrograde	4242 Nov 29 04:12	18° $\mathcal{O}$ 05'31	
evening set	4237 May 01 20:51	27° $\mathcal{B}$ 16'54		asc. node	4242 Dec 30 05:17	17° $\mathcal{O}$ 13'39	
					4243 Jan 30 15:16	15° $\mathcal{R}\mathcal{O}$	
conjunction	4237 May 19 02:33	29° $\mathcal{B}$ 25'53	-2°-5'-4	opposition	4243 Feb 04 05:57	14° $\mathcal{O}$ 37'18	0°03'45
minimum elong	4237 May 19 02:35	29° $\mathcal{B}$ 25'54	2°05'06	min. Earth dist.	4243 Feb 04 03:17	14° $\mathcal{O}$ 37'51	8.09781 AU
max. Earth dist.	4237 May 19 02:26	29° $\mathcal{B}$ 25'51	10.41062 AU	direct	4243 Apr 12 03:02	11° $\mathcal{O}$ 09'20	
	4237 May 23 15:15	0° $\Pi$			4243 Jun 18 20:46	15° $\mathcal{O}$	
morning rise	4237 Jun 05 12:49	1° $\Pi$ 36'18		evening set	4243 Jul 25 14:44	19° $\mathcal{O}$ 17'11	
retrograde	4237 Sep 19 20:24	9° $\Pi$ 34'33					
opposition	4237 Nov 28 02:02	6° $\Pi$ 06'55	-2°-28'-34	conjunction	4243 Aug 12 17:40	21° $\mathcal{O}$ 36'45	0°18'47
min. Earth dist.	4237 Nov 28 01:29	6° $\Pi$ 07'02	8.36448 AU	minimum elong	4243 Aug 12 17:39	21° $\mathcal{O}$ 36'45	0°18'47
direct	4238 Feb 03 06:49	2° $\Pi$ 43'38		max. Earth dist.	4243 Aug 12 20:27	21° $\mathcal{O}$ 37'39	10.10055 AU
evening set	4238 May 15 08:43	10° $\Pi$ 24'01		morning rise	4243 Aug 30 20:39	23° $\mathcal{O}$ 56'19	
					4243 Oct 25 19:26	0° $\mathcal{M}$	
conjunction	4238 Jun 01 19:04	12° $\Pi$ 35'38	-1°-53'-21	retrograde	4243 Dec 13 10:11	2° $\mathcal{M}$ 04'35	
minimum elong	4238 Jun 01 19:07	12° $\Pi$ 35'39	1°53'23		4244 Jan 31 21:44	30° $\mathcal{R}\mathcal{O}$	
max. Earth dist.	4238 Jun 01 19:38	12° $\Pi$ 35'49	10.31832 AU	opposition	4244 Feb 18 06:05	28° $\mathcal{O}$ 37'01	0°42'41
morning rise	4238 Jun 19 09:54	14° $\Pi$ 48'37		min. Earth dist.	4244 Feb 18 04:09	28° $\mathcal{O}$ 37'25	8.10910 AU
retrograde	4238 Oct 03 21:09	22° $\Pi$ 52'55		direct	4244 Apr 25 09:55	25° $\mathcal{O}$ 08'30	
opposition	4238 Dec 11 15:53	19° $\Pi$ 24'37	-2°-10'-17		4244 Jul 11 22:55	0° $\mathcal{M}$	
min. Earth dist.	4238 Dec 11 15:00	19° $\Pi$ 24'48	8.27671 AU	evening set	4244 Aug 08 12:41	3° $\mathcal{M}$ 17'51	
direct	4239 Feb 16 14:15	16° $\Pi$ 00'17					
evening set	4239 May 29 05:35	23° $\Pi$ 47'45		conjunction	4244 Aug 26 14:59	5° $\mathcal{M}$ 36'52	0°49'14
				minimum elong	4244 Aug 26 14:57	5° $\mathcal{M}$ 36'51	0°49'14
conjunction	4239 Jun 15 20:50	26° $\Pi$ 01'54	-1°-35'-19	max. Earth dist.	4244 Aug 26 16:48	5° $\mathcal{M}$ 37'27	10.12278 AU
minimum elong	4239 Jun 15 20:53	26° $\Pi$ 01'55	1°35'21	morning rise	4244 Sep 13 16:15	7° $\mathcal{M}$ 55'32	
max. Earth dist.	4239 Jun 15 22:40	26° $\Pi$ 02'30	10.23685 AU	retrograde	4244 Dec 26 11:46	15° $\mathcal{M}$ 59'13	
morning rise	4239 Jul 03 16:00	28° $\Pi$ 17'19		opposition	4245 Mar 03 04:47	12° $\mathcal{M}$ 32'31	1°18'52
	4239 Jul 17 16:03	0° $\Theta$		min. Earth dist.	4245 Mar 03 03:21	12° $\mathcal{M}$ 32'49	8.14203 AU
retrograde	4239 Oct 18 02:26	6° $\Theta$ 26'11		direct	4245 May 09 18:14	9° $\mathcal{M}$ 03'44	
opposition	4239 Dec 25 09:30	2° $\Theta$ 57'29	-1°-44'-26	evening set	4245 Aug 23 08:49	17° $\mathcal{M}$ 12'55	
min. Earth dist.	4239 Dec 25 07:45	2° $\Theta$ 57'51	8.20219 AU				
	4240 Feb 07 14:42	30° $\mathcal{R}\Pi$		conjunction	4245 Sep 10 09:11	19° $\mathcal{M}$ 30'42	1°16'36





























































































































minimum elong	4245 Sep 10 09:08	19° $\overline{\text{M}}$ 30'41	1°16'36	max. Earth dist.	4251 Nov 30 10:13	8° $\overline{\text{J}}$ 05'41	10.67791 AU
max. Earth dist.	4245 Sep 10 10:15	19° $\overline{\text{M}}$ 31'03	10.16531 AU	morning rise	4251 Dec 17 10:02	10° $\overline{\text{J}}$ 09'24	
morning rise	4245 Sep 28 07:24	21° $\overline{\text{M}}$ 47'49		retrograde	4252 Mar 26 06:58	17° $\overline{\text{J}}$ 25'32	
retrograde	4246 Jan 09 07:46	29° $\overline{\text{M}}$ 45'49		opposition	4252 Jun 02 17:31	14° $\overline{\text{J}}$ 06'02	2°18'04
opposition	4246 Mar 17 01:08	26° $\overline{\text{M}}$ 20'10	1°50'05	min. Earth dist.	4252 Jun 02 17:30	14° $\overline{\text{J}}$ 06'02	8.72408 AU
min. Earth dist.	4246 Mar 16 23:53	26° $\overline{\text{M}}$ 20'25	8.19416 AU	direct	4252 Aug 12 07:40	10° $\overline{\text{J}}$ 41'46	
direct	4246 May 24 01:41	22° $\overline{\text{M}}$ 51'25		evening set	4252 Nov 24 20:55	18° $\overline{\text{J}}$ 11'46	
	4246 Aug 30 02:27	0° $\overline{\text{L}}$					
evening set	4246 Sep 07 00:50	0° $\overline{\text{L}}$ 58'46		conjunction	4252 Dec 11 21:05	20° $\overline{\text{J}}$ 14'30	1°44'36
				minimum elong	4252 Dec 11 21:07	20° $\overline{\text{J}}$ 14'31	1°44'35
conjunction	4246 Sep 24 22:12	3° $\overline{\text{L}}$ 14'47	1°39'19	max. Earth dist.	4252 Dec 11 20:46	20° $\overline{\text{J}}$ 14'24	10.76621 AU
minimum elong	4246 Sep 24 22:09	3° $\overline{\text{L}}$ 14'46	1°39'19	morning rise	4252 Dec 28 17:31	22° $\overline{\text{J}}$ 16'11	
max. Earth dist.	4246 Sep 24 23:01	3° $\overline{\text{L}}$ 15'03	10.22594 AU	retrograde	4253 Apr 07 12:53	29° $\overline{\text{J}}$ 27'05	
morning rise	4246 Oct 12 16:26	5° $\overline{\text{L}}$ 29'50		opposition	4253 Jun 15 08:42	26° $\overline{\text{J}}$ 08'12	1°57'52
retrograde	4247 Jan 22 23:28	13° $\overline{\text{L}}$ 21'18		min. Earth dist.	4253 Jun 15 08:52	26° $\overline{\text{J}}$ 08'10	8.80723 AU
opposition	4247 Mar 30 18:33	9° $\overline{\text{L}}$ 56'46	2°14'38	direct	4253 Aug 25 04:26	22° $\overline{\text{J}}$ 45'00	
min. Earth dist.	4247 Mar 30 17:14	9° $\overline{\text{L}}$ 57'02	8.26321 AU		4253 Dec 05 22:37	0° $\overline{\text{C}}$	
direct	4247 Jun 07 05:47	6° $\overline{\text{L}}$ 28'20		evening set	4253 Dec 07 01:54	0° $\overline{\text{C}}$ 08'01	
evening set	4247 Sep 21 10:28	14° $\overline{\text{L}}$ 32'04					
				conjunction	4253 Dec 23 23:49	2° $\overline{\text{C}}$ 09'12	1°26'16
conjunction	4247 Oct 09 04:05	16° $\overline{\text{L}}$ 45'56	1°56'11	minimum elong	4253 Dec 23 23:52	2° $\overline{\text{C}}$ 09'13	1°26'15
minimum elong	4247 Oct 09 04:03	16° $\overline{\text{L}}$ 45'55	1°56'12	max. Earth dist.	4253 Dec 23 23:21	2° $\overline{\text{C}}$ 09'03	10.84389 AU
max. Earth dist.	4247 Oct 09 05:05	16° $\overline{\text{L}}$ 46'15	10.30207 AU	morning rise	4254 Jan 09 18:30	4° $\overline{\text{C}}$ 09'28	
morning rise	4247 Oct 26 17:46	18° $\overline{\text{L}}$ 58'35		retrograde	4254 Apr 19 14:16	11° $\overline{\text{C}}$ 16'18	
retrograde	4248 Feb 05 09:36	26° $\overline{\text{L}}$ 42'52		opposition	4254 Jun 27 20:20	7° $\overline{\text{C}}$ 57'52	1°33'00
opposition	4248 Apr 12 08:16	23° $\overline{\text{L}}$ 19'29	2°31'22	min. Earth dist.	4254 Jun 27 21:12	7° $\overline{\text{C}}$ 57'42	8.87819 AU
min. Earth dist.	4248 Apr 12 07:12	23° $\overline{\text{L}}$ 19'42	8.34600 AU	direct	4254 Sep 06 17:48	4° $\overline{\text{C}}$ 35'42	
direct	4248 Jun 20 06:22	19° $\overline{\text{L}}$ 51'36		evening set	4254 Dec 19 00:36	11° $\overline{\text{C}}$ 52'33	
evening set	4248 Oct 04 12:03	27° $\overline{\text{L}}$ 50'10					
	4248 Oct 21 20:24	0° $\overline{\text{M}}$		conjunction	4255 Jan 04 20:35	13° $\overline{\text{C}}$ 52'28	1°04'32
				minimum elong	4255 Jan 04 20:37	13° $\overline{\text{C}}$ 52'28	1°04'32
conjunction	4248 Oct 22 01:37	0° $\overline{\text{M}}$ 01'38	2°06'33	max. Earth dist.	4255 Jan 04 19:10	13° $\overline{\text{C}}$ 52'02	10.90793 AU
minimum elong	4248 Oct 22 01:36	0° $\overline{\text{M}}$ 01'38	2°06'34	morning rise	4255 Jan 21 14:10	15° $\overline{\text{C}}$ 51'40	
max. Earth dist.	4248 Oct 22 02:27	0° $\overline{\text{M}}$ 01'54	10.39005 AU	retrograde	4255 May 01 12:27	22° $\overline{\text{C}}$ 55'48	
morning rise	4248 Nov 08 10:50	2° $\overline{\text{M}}$ 11'49		opposition	4255 Jul 10 05:15	19° $\overline{\text{C}}$ 37'37	1°04'39
retrograde	4249 Feb 17 12:33	9° $\overline{\text{M}}$ 48'35		min. Earth dist.	4255 Jul 10 06:31	19° $\overline{\text{C}}$ 37'23	8.93427 AU
opposition	4249 Apr 25 17:36	6° $\overline{\text{M}}$ 26'20	2°39'47	direct	4255 Sep 19 04:27	16° $\overline{\text{C}}$ 16'26	
min. Earth dist.	4249 Apr 25 17:21	6° $\overline{\text{M}}$ 26'23	8.43836 AU	evening set	4255 Dec 30 18:13	23° $\overline{\text{C}}$ 28'07	
direct	4249 Jul 04 02:56	2° $\overline{\text{M}}$ 59'10					
evening set	4249 Oct 18 04:25	10° $\overline{\text{M}}$ 51'21		conjunction	4256 Jan 16 12:44	25° $\overline{\text{C}}$ 27'04	0°40'23
				minimum elong	4256 Jan 16 12:46	25° $\overline{\text{C}}$ 27'04	0°40'24
conjunction	4249 Nov 04 13:59	13° $\overline{\text{M}}$ 00'24	2°10'13	max. Earth dist.	4256 Jan 16 11:04	25° $\overline{\text{C}}$ 26'34	10.95590 AU
minimum elong	4249 Nov 04 13:59	13° $\overline{\text{M}}$ 00'23	2°10'14	morning rise	4256 Feb 02 05:38	27° $\overline{\text{C}}$ 25'31	
max. Earth dist.	4249 Nov 04 13:55	13° $\overline{\text{M}}$ 00'22	10.48529 AU		4256 Feb 25 10:26	0° $\approx$	
	4249 Nov 20 16:34	15° $\overline{\text{M}}$		retrograde	4256 May 12 11:42	4° $\approx$ 28'24	
morning rise	4249 Nov 21 19:12	15° $\overline{\text{M}}$ 08'08		opposition	4256 Jul 21 12:03	1° $\approx$ 10'15	0°33'58
retrograde	4250 Mar 02 08:09	22° $\overline{\text{M}}$ 37'28		min. Earth dist.	4256 Jul 21 12:50	1° $\approx$ 10'07	8.97326 AU
opposition	4250 May 08 22:17	19° $\overline{\text{M}}$ 16'17	2°39'58		4256 Aug 06 14:32	30° $\overline{\text{R}}$ $\overline{\text{C}}$	
min. Earth dist.	4250 May 08 22:42	19° $\overline{\text{M}}$ 16'12	8.53536 AU	direct	4256 Sep 30 10:59	27° $\overline{\text{C}}$ 49'58	
direct	4250 Jul 17 18:55	15° $\overline{\text{M}}$ 49'58			4256 Nov 22 02:31	0° $\approx$	
evening set	4250 Oct 31 11:14	23° $\overline{\text{M}}$ 35'00		evening set	4257 Jan 10 08:34	4° $\approx$ 57'37	
conjunction	4250 Nov 17 17:05	25° $\overline{\text{M}}$ 41'42	2°07'23	conjunction	4257 Jan 27 02:05	6° $\approx$ 55'56	0°14'47
minimum elong	4250 Nov 17 17:06	25° $\overline{\text{M}}$ 41'42	2°07'24	minimum elong	4257 Jan 27 02:05	6° $\approx$ 55'56	0°14'48
max. Earth dist.	4250 Nov 17 16:10	25° $\overline{\text{M}}$ 41'25	10.58282 AU	behind sun begin	4257 Jan 26 23:06	6° $\approx$ 55'03	
morning rise	4250 Dec 04 18:48	27° $\overline{\text{M}}$ 47'09		behind sun end	4257 Jan 27 05:04	6° $\approx$ 56'48	
	4250 Dec 23 18:52	0° $\overline{\text{J}}$		max. Earth dist.	4257 Jan 27 01:03	6° $\approx$ 55'38	10.98582 AU
retrograde	4251 Mar 14 22:12	5° $\overline{\text{J}}$ 09'30		morning rise	4257 Feb 12 18:28	8° $\approx$ 53'57	
opposition	4251 May 21 22:11	1° $\overline{\text{J}}$ 49'14	2°32'27		4257 Apr 20 06:59	15° $\approx$	
min. Earth dist.	4251 May 21 22:40	1° $\overline{\text{J}}$ 49'09	8.63210 AU	retrograde	4257 May 24 10:07	15° $\approx$ 56'59	
	4251 Jun 15 19:12	30° $\overline{\text{R}}$ $\overline{\text{M}}$			4257 Jun 28 07:04	15° $\overline{\text{R}}$ $\approx$	
direct	4251 Jul 31 04:23	28° $\overline{\text{M}}$ 23'55		opposition	4257 Aug 02 17:33	12° $\approx$ 38'40	0°02'08
	4251 Sep 13 17:44	0° $\overline{\text{J}}$		min. Earth dist.	4257 Aug 02 17:53	12° $\approx$ 38'37	8.99360 AU
evening set	4251 Nov 13 08:31	6° $\overline{\text{J}}$ 01'24		desc. node	4257 Aug 27 20:14	10° $\approx$ 52'49	
				direct	4257 Oct 12 12:15	9° $\approx$ 19'08	
					4258 Jan 09 12:56	15° $\approx$	
conjunction	4251 Nov 30 11:14	8° $\overline{\text{J}}$ 06'00	1°58'36	evening set	4258 Jan 21 21:10	16° $\approx$ 24'05	
minimum elong	4251 Nov 30 11:16	8° $\overline{\text{J}}$ 06'00	1°58'36				



conjunction	4258 Feb 07 13:50	18° $\approx$ 22'02	0°-11'-23	minimum elong	4264 Apr 17 14:31	28° $\Upsilon$ 42'42	2°06'13
minimum elong	4258 Feb 07 13:49	18° $\approx$ 22'02	0°11'23	max. Earth dist.	4264 Apr 17 13:10	28° $\Upsilon$ 42'17	10.68655 AU
behind sun begin	4258 Feb 07 08:40	18° $\approx$ 20'32			4264 Apr 28 03:59	0° $\delta$	
behind sun end	4258 Feb 07 18:58	18° $\approx$ 23'33		morning rise	4264 May 04 15:12	0° $\delta$ 46'48	
max. Earth dist.	4258 Feb 07 13:05	18° $\approx$ 21'49	10.99653 AU	retrograde	4264 Aug 17 19:53	8° $\delta$ 24'59	
morning rise	4258 Feb 24 06:04	20° $\approx$ 19'56		opposition	4264 Oct 27 00:50	5° $\delta$ 00'38	-2°-38'-51
retrograde	4258 Jun 05 10:50	27° $\approx$ 24'35		min. Earth dist.	4264 Oct 27 01:46	5° $\delta$ 00'27	8.64012 AU
opposition	4258 Aug 14 23:07	24° $\approx$ 05'54	0°-29'-42	direct	4265 Jan 03 04:57	1° $\delta$ 40'27	
min. Earth dist.	4258 Aug 14 23:43	24° $\approx$ 05'48	8.99463 AU	evening set	4265 Apr 13 07:52	9° $\delta$ 02'08	
direct	4258 Oct 24 12:29	20° $\approx$ 46'56					
evening set	4259 Feb 02 09:22	27° $\approx$ 50'28		conjunction	4265 Apr 30 07:36	11° $\delta$ 07'05	-2°-10'-13
				minimum elong	4265 Apr 30 07:36	11° $\delta$ 07'05	2°10'14
conjunction	4259 Feb 19 01:21	29° $\approx$ 48'23	0°-37'-1	max. Earth dist.	4265 Apr 30 06:40	11° $\delta$ 06'48	10.58946 AU
minimum elong	4259 Feb 19 01:20	29° $\approx$ 48'23	0°37'02	morning rise	4265 May 17 11:35	13° $\delta$ 13'23	
max. Earth dist.	4259 Feb 18 23:50	29° $\approx$ 47'56	10.98779 AU		4265 Jun 01 13:30	15° $\delta$	
	4259 Feb 20 16:29	0° $\chi$		retrograde	4265 Aug 31 04:49	20° $\delta$ 59'18	
morning rise	4259 Mar 07 17:58	1° $\chi$ 46'30		opposition	4265 Nov 09 02:00	17° $\delta$ 33'46	-2°-40'-19
retrograde	4259 Jun 17 13:10	8° $\chi$ 54'07		min. Earth dist.	4265 Nov 09 02:37	17° $\delta$ 33'39	8.54028 AU
opposition	4259 Aug 27 05:21	5° $\chi$ 34'52	-1°00'-26		4265 Dec 16 13:52	15° $\mathcal{R}$ $\delta$	
min. Earth dist.	4259 Aug 27 06:29	5° $\chi$ 34'40	8.97642 AU	direct	4266 Jan 15 20:28	14° $\delta$ 12'40	
direct	4259 Nov 05 10:43	2° $\chi$ 16'15			4266 Feb 14 15:39	15° $\delta$	
evening set	4260 Feb 13 22:43	9° $\chi$ 19'44		evening set	4266 Apr 26 05:55	21° $\delta$ 40'59	
conjunction	4260 Mar 01 14:32	11° $\chi$ 17'57	-1°-1'-17	conjunction	4266 May 13 09:34	23° $\delta$ 48'20	-2°-8'-3
minimum elong	4260 Mar 01 14:30	11° $\chi$ 17'56	1°01'18	minimum elong	4266 May 13 09:35	23° $\delta$ 48'21	2°08'04
max. Earth dist.	4260 Mar 01 12:57	11° $\chi$ 17'29	10.95998 AU	max. Earth dist.	4266 May 13 09:21	23° $\delta$ 48'16	10.48826 AU
morning rise	4260 Mar 18 07:49	13° $\chi$ 16'35		morning rise	4266 May 30 17:28	25° $\delta$ 57'05	
retrograde	4260 Jun 28 17:32	20° $\chi$ 28'28			4266 Jul 05 15:56	0° $\Pi$	
opposition	4260 Sep 07 12:49	17° $\chi$ 08'27	-1°-28'-57	retrograde	4266 Sep 13 20:25	3° $\Pi$ 50'27	
min. Earth dist.	4260 Sep 07 13:45	17° $\chi$ 08'16	8.93962 AU	opposition	4266 Nov 22 07:54	0° $\Pi$ 23'50	-2°-33'-55
direct	4260 Nov 16 10:36	13° $\chi$ 49'57		min. Earth dist.	4266 Nov 22 07:46	0° $\Pi$ 23'52	8.43905 AU
evening set	4261 Feb 24 14:34	20° $\chi$ 54'45			4266 Nov 27 09:11	30° $\mathcal{R}$ $\delta$	
				direct	4267 Jan 28 17:46	27° $\delta$ 01'39	
conjunction	4261 Mar 13 06:47	22° $\chi$ 53'36	-1°-23'-13		4267 Mar 28 21:24	0° $\Pi$	
minimum elong	4261 Mar 13 06:44	22° $\chi$ 53'35	1°23'15	evening set	4267 May 09 12:38	4° $\Pi$ 37'02	
max. Earth dist.	4261 Mar 13 06:06	22° $\chi$ 53'24	10.91403 AU				
morning rise	4261 Mar 30 00:59	24° $\chi$ 53'04		conjunction	4267 May 26 20:43	6° $\Pi$ 47'00	-1°-59'-23
	4261 May 19 11:47	0° $\Upsilon$		minimum elong	4267 May 26 20:45	6° $\Pi$ 47'01	1°59'25
retrograde	4261 Jul 11 04:51	2° $\Upsilon$ 10'23		max. Earth dist.	4267 May 26 20:47	6° $\Pi$ 47'01	10.38869 AU
	4261 Sep 03 21:18	30° $\mathcal{R}$ $\chi$		morning rise	4267 Jun 13 09:03	8° $\Pi$ 58'20	
opposition	4261 Sep 19 22:40	28° $\chi$ 49'24	-1°-54'-7	retrograde	4267 Sep 27 18:58	16° $\Pi$ 58'21	
min. Earth dist.	4261 Sep 19 22:46	28° $\chi$ 49'23	8.88544 AU	opposition	4267 Dec 05 18:28	13° $\Pi$ 30'48	-2°-19'-27
direct	4261 Nov 28 11:25	25° $\chi$ 30'52		min. Earth dist.	4267 Dec 05 17:57	13° $\Pi$ 30'54	8.34219 AU
	4262 Feb 12 22:02	0° $\Upsilon$		direct	4268 Feb 10 19:45	10° $\Pi$ 07'24	
evening set	4262 Mar 08 10:10	2° $\Upsilon$ 38'10		evening set	4268 May 22 04:16	17° $\Pi$ 50'03	
conjunction	4262 Mar 25 03:12	4° $\Upsilon$ 38'00	-1°-41'-56	conjunction	4268 Jun 08 17:00	20° $\Pi$ 02'38	-1°-44'-18
minimum elong	4262 Mar 25 03:10	4° $\Upsilon$ 37'59	1°41'57	minimum elong	4268 Jun 08 17:02	20° $\Pi$ 02'39	1°44'20
max. Earth dist.	4262 Mar 25 03:00	4° $\Upsilon$ 37'56	10.85157 AU	max. Earth dist.	4268 Jun 08 16:54	20° $\Pi$ 02'36	10.29639 AU
morning rise	4262 Apr 10 22:50	6° $\Upsilon$ 38'40		morning rise	4268 Jun 26 09:52	22° $\Pi$ 16'32	
retrograde	4262 Jul 23 20:40	14° $\Upsilon$ 02'19			4268 Sep 20 10:06	0° $\mathfrak{S}$	
opposition	4262 Oct 02 11:39	10° $\Upsilon$ 40'17	-2°-14'-51	retrograde	4268 Oct 10 21:10	0° $\mathfrak{S}$ 21'58	
min. Earth dist.	4262 Oct 02 11:30	10° $\Upsilon$ 40'19	8.81583 AU		4268 Oct 31 07:04	30° $\mathcal{R}$ $\Pi$	
direct	4262 Dec 10 12:34	7° $\Upsilon$ 21'28		opposition	4268 Dec 18 09:15	26° $\Pi$ 53'42	-1°-57'-9
evening set	4263 Mar 20 10:59	14° $\Upsilon$ 32'29		min. Earth dist.	4268 Dec 18 08:50	26° $\Pi$ 53'47	8.25526 AU
				direct	4269 Feb 23 05:15	23° $\Pi$ 29'01	
conjunction	4263 Apr 06 05:24	16° $\Upsilon$ 33'39	-1°-56'-32		4269 May 25 12:20	0° $\mathfrak{S}$	
minimum elong	4263 Apr 06 05:22	16° $\Upsilon$ 33'38	1°56'33	evening set	4269 Jun 05 04:23	1° $\mathfrak{S}$ 18'45	
max. Earth dist.	4263 Apr 06 04:37	16° $\Upsilon$ 33'24	10.77491 AU				
morning rise	4263 Apr 23 03:14	18° $\Upsilon$ 35'51		conjunction	4269 Jun 22 21:46	3° $\mathfrak{S}$ 33'47	-1°-23'-16
retrograde	4263 Aug 05 16:58	26° $\Upsilon$ 06'33		minimum elong	4269 Jun 22 21:49	3° $\mathfrak{S}$ 33'48	1°23'18
opposition	4263 Oct 15 04:10	22° $\Upsilon$ 43'22	-2°-30'-5	max. Earth dist.	4269 Jun 22 21:40	3° $\mathfrak{S}$ 33'46	10.21673 AU
min. Earth dist.	4263 Oct 15 04:34	22° $\Upsilon$ 43'18	8.73319 AU	morning rise	4269 Jul 10 18:54	5° $\mathfrak{S}$ 50'01	
direct	4263 Dec 22 18:42	19° $\Upsilon$ 23'58		retrograde	4269 Oct 25 02:11	13° $\mathfrak{S}$ 59'19	
evening set	4264 Mar 31 17:54	26° $\Upsilon$ 39'50		opposition	4270 Jan 01 03:46	10° $\mathfrak{S}$ 30'36	-1°-27'-54
				min. Earth dist.	4270 Jan 01 03:28	10° $\mathfrak{S}$ 30'40	8.18342 AU
conjunction	4264 Apr 17 14:32	28° $\Upsilon$ 42'42	-2°-6'-12	direct	4270 Mar 08 21:41	7° $\mathfrak{S}$ 04'41	



evening set	4270 Jun 19 12:14	15°  00'53		evening set	4276 Sep 13 23:34	8°  20'51	
conjunction	4270 Jul 07 09:52	17°  18'03	0°-57'-15	conjunction	4276 Oct 01 19:01	10°  35'55	1°48'53
minimum elong	4270 Jul 07 09:54	17°  18'04	0°57'17	minimum elong	4276 Oct 01 18:58	10°  35'54	1°48'53
max. Earth dist.	4270 Jul 07 10:21	17°  18'12	10.15431 AU	max. Earth dist.	4276 Oct 01 19:49	10°  36'10	10.25177 AU
morning rise	4270 Jul 25 10:26	19°  36'08		morning rise	4276 Oct 19 11:05	12°  49'54	
retrograde	4270 Nov 08 08:56	27°  47'31		retrograde	4277 Jan 29 09:55	20°  37'59	
opposition	4271 Jan 15 01:04	24°  18'38	0°-53'-9	opposition	4277 Apr 06 07:04	17°  13'36	2°24'23
min. Earth dist.	4271 Jan 15 00:23	24°  18'46	8.13079 AU	min. Earth dist.	4277 Apr 06 06:07	17°  13'47	8.29393 AU
direct	4271 Mar 22 19:21	20°  51'34		direct	4277 Jun 14 00:09	13°  44'58	
evening set	4271 Jul 04 02:46	28°  53'20		evening set	4277 Sep 28 05:05	21°  46'28	
	4271 Jul 12 20:06	0° 					
conjunction	4271 Jul 22 03:39	1°  12'02	0°-27'-39	conjunction	4277 Oct 15 20:36	23°  59'12	2°02'23
minimum elong	4271 Jul 22 03:41	1°  12'03	0°27'41	minimum elong	4277 Oct 15 20:34	23°  59'11	2°02'24
max. Earth dist.	4271 Jul 22 04:49	1°  12'25	10.11265 AU	max. Earth dist.	4277 Oct 15 21:08	23°  59'22	10.33703 AU
morning rise	4271 Aug 09 06:20	3°  31'19		morning rise	4277 Nov 02 08:14	26°  10'43	
retrograde	4271 Nov 22 16:58	11°  42'50		retrograde	4277 Dec 05 14:58	0° 	
opposition	4272 Jan 29 00:00	8°  14'04	0°-14'-56	opposition	4278 Feb 11 14:58	3°  51'21	
min. Earth dist.	4272 Jan 28 22:43	8°  14'20	8.10042 AU	opposition	4278 Apr 19 18:18	0°  28'15	2°36'46
direct	4272 Apr 04 20:41	4°  46'03		min. Earth dist.	4278 Apr 19 16:59	0°  28'31	8.38492 AU
asc. node	4272 Jun 21 01:37	9°  38'42			4278 Apr 25 16:48	30°  R 	
evening set	4272 Jul 17 21:55	12°  52'07		direct	4278 Jun 27 23:39	27°  40'00'26	
	4272 Aug 03 12:45	15° 			4278 Aug 28 00:43	0° 	
				evening set	4278 Oct 12 02:00	4°  56'06	
conjunction	4272 Aug 05 00:41	15°  11'37	0°03'49	conjunction	4278 Oct 29 13:35	7°  56'23	2°09'14
minimum elong	4272 Aug 05 00:40	15°  11'37	0°03'49	minimum elong	4278 Oct 29 13:34	7°  56'23	2°09'15
behind sun begin	4272 Aug 04 17:24	15°  09'17		max. Earth dist.	4278 Oct 29 14:31	7°  56'41	10.43225 AU
behind sun end	4272 Aug 05 07:56	15°  13'56		morning rise	4278 Nov 15 20:50	9°  51'52'3	
max. Earth dist.	4272 Aug 05 02:33	15°  12'11	10.09421 AU		4279 Jan 10 02:19	15°  51'52'3	
morning rise	4272 Aug 23 03:54	17°  31'17		retrograde	4279 Feb 24 15:03	16°  51'52'3	
retrograde	4272 Dec 06 00:08	25°  41'05			4279 Apr 12 11:55	15°  51'52'3	
opposition	4273 Feb 10 23:43	22°  12'43	0°24'19	opposition	4279 May 03 01:16	13°  51'52'3	2°40'48
min. Earth dist.	4273 Feb 10 21:49	22°  13'07	8.09415 AU	min. Earth dist.	4279 May 02 23:54	13°  51'52'3	8.48323 AU
direct	4273 Apr 19 01:32	18°  43'58		direct	4279 Jul 11 17:18	9°  51'52'3	
evening set	4273 Aug 01 19:16	26°  45'24			4279 Oct 01 06:21	15°  51'52'3	
				evening set	4279 Oct 25 13:27	17°  51'52'3	
conjunction	4273 Aug 19 22:16	29°  12'12	0°34'58	conjunction	4279 Nov 11 21:14	19°  51'52'3	2°09'26
minimum elong	4273 Aug 19 22:15	29°  12'11	0°34'58	minimum elong	4279 Nov 11 21:15	19°  51'52'3	2°09'26
max. Earth dist.	4273 Aug 20 00:36	29°  12'57	10.10006 AU	max. Earth dist.	4279 Nov 11 22:30	19°  51'52'3	10.53235 AU
	4273 Aug 26 02:20	0° 		morning rise	4279 Nov 29 00:33	22°  51'52'3	
morning rise	4273 Sep 07 00:30	1°  31'28		retrograde	4280 Mar 08 09:59	29°  51'52'3	
retrograde	4273 Dec 20 04:08	9°  37'46		opposition	4280 May 15 03:44	26°  51'52'3	2°36'50
opposition	4274 Feb 24 22:58	6°  10'05	1°02'05	min. Earth dist.	4280 May 15 02:50	26°  51'52'3	8.58384 AU
min. Earth dist.	4274 Feb 24 21:04	6°  10'28	8.11223 AU	direct	4280 Jul 24 03:50	22°  51'52'3	
direct	4274 May 03 08:17	2°  40'53			4280 Nov 03 06:44	0° 	
evening set	4274 Aug 16 16:32	10°  50'36		evening set	4280 Nov 06 15:37	0° 	
conjunction	4274 Sep 03 18:13	13°  09'13	1°04'01	conjunction	4280 Nov 23 19:57	2°  51'52'3	2°03'22
minimum elong	4274 Sep 03 18:10	13°  09'12	1°04'01	minimum elong	4280 Nov 23 19:58	2°  51'52'3	2°03'23
max. Earth dist.	4274 Sep 03 20:11	13°  09'51	10.12971 AU	max. Earth dist.	4280 Nov 23 20:47	2°  51'52'3	10.63240 AU
morning rise	4274 Sep 21 18:00	15°  07'17		morning rise	4280 Dec 10 20:02	4°  51'52'3	
retrograde	4275 Jan 03 03:36	23°  07'33		retrograde	4281 Mar 20 21:05	11°  51'52'3	
opposition	4275 Mar 10 20:30	20°  01'49	1°35'56	opposition	4281 May 28 01:30	8°  51'52'3	2°25'33
min. Earth dist.	4275 Mar 10 19:06	20°  02'06	8.15343 AU	min. Earth dist.	4281 May 28 01:34	8°  51'52'3	8.68193 AU
direct	4275 May 17 15:05	16°  02'28		direct	4281 Aug 06 10:16	5°  51'52'3	
evening set	4275 Aug 31 10:52	24°  01'15		evening set	4281 Nov 19 08:51	12°  51'52'3	
conjunction	4275 Sep 18 09:51	26°  05'21	1°29'07	conjunction	4281 Dec 06 10:10	14°  51'52'3	1°51'43
minimum elong	4275 Sep 18 09:48	26°  05'20	1°29'07	minimum elong	4281 Dec 06 10:12	14°  51'52'3	1°51'43
max. Earth dist.	4275 Sep 18 11:12	26°  05'46	10.18129 AU	max. Earth dist.	4281 Dec 06 09:47	14°  51'52'3	10.72768 AU
morning rise	4275 Oct 06 06:06	29°  05'45		morning rise	4281 Dec 23 07:45	16°  51'52'3	
	4275 Oct 12 08:14	0° 		retrograde	4282 Apr 02 03:56	24°  51'52'3	
retrograde	4276 Jan 16 22:09	7°  09'39		opposition	4282 Jun 09 19:05	20°  51'52'3	2°07'56
opposition	4276 Mar 23 15:34	3°  44'02	2°03'50	min. Earth dist.	4282 Jun 09 19:24	20°  51'52'3	8.77291 AU
min. Earth dist.	4276 Mar 23 14:34	3°  44'15	8.21523 AU	direct	4282 Aug 19 11:17	17°  51'52'3	
direct	4276 May 30 20:33	0°					



evening set	4282 Dec 01 17:50	24° <del>2</del> 47'24		min. Earth dist.	4288 Aug 20 23:38	0° <del>1</del> 31'11	8.98233 AU
					4288 Aug 28 00:45	30° <del>1</del> <del>2</del>	
conjunction	4282 Dec 18 16:40	26° <del>2</del> 49'18	1°35'18	direct	4288 Oct 30 08:09	27° <del>1</del> <del>2</del> 40	
minimum elong	4282 Dec 18 16:42	26° <del>2</del> 49'18	1°35'18		4288 Dec 29 01:59	0° <del>1</del>	
max. Earth dist.	4282 Dec 18 15:57	26° <del>2</del> 49'05	10.81377 AU	evening set	4289 Feb 08 00:06	4° <del>1</del> 16'27	
morning rise	4283 Jan 04 12:16	28° <del>2</del> 50'13					
	4283 Jan 14 12:31	0° <del>3</del>		conjunction	4289 Feb 24 16:08	6° <del>1</del> 14'36	0°-50'-15
retrograde	4283 Apr 14 07:42	5° <del>3</del> 59'01		minimum elong	4289 Feb 24 16:07	6° <del>1</del> 14'35	0°50'17
opposition	4283 Jun 22 08:50	2° <del>3</del> 40'50	1°45'06	max. Earth dist.	4289 Feb 24 14:07	6° <del>1</del> 14'00	10.96780 AU
min. Earth dist.	4283 Jun 22 08:54	2° <del>3</del> 40'49	8.85263 AU	morning rise	4289 Mar 13 08:57	8° <del>1</del> 13'03	
	4283 Aug 02 16:36	30° <del>1</del> <del>2</del>		retrograde	4289 Jun 23 12:36	15° <del>1</del> 23'14	
direct	4283 Sep 01 05:17	29° <del>2</del> 18'40		opposition	4289 Sep 02 05:27	12° <del>1</del> 03'27	-1°-16'-7
	4283 Sep 30 09:31	0° <del>3</del>		min. Earth dist.	4289 Sep 02 06:58	12° <del>1</del> 03'10	8.94902 AU
evening set	4283 Dec 13 19:47	6° <del>3</del> 38'30		direct	4289 Nov 11 07:06	8° <del>1</del> 44'43	
				evening set	4290 Feb 19 15:05	15° <del>1</del> 49'15	
conjunction	4283 Dec 30 16:43	8° <del>3</del> 38'58	1°15'02				
minimum elong	4283 Dec 30 16:46	8° <del>3</del> 38'59	1°15'02	conjunction	4290 Mar 08 07:04	17° <del>1</del> 47'54	-1°-13'-25
max. Earth dist.	4283 Dec 30 16:16	8° <del>3</del> 38'50	10.88670 AU	minimum elong	4290 Mar 08 07:02	17° <del>1</del> 47'53	1°13'27
morning rise	4284 Jan 16 10:47	10° <del>3</del> 38'38		max. Earth dist.	4290 Mar 08 04:31	17° <del>1</del> 47'08	10.92518 AU
retrograde	4284 Apr 25 08:34	17° <del>3</del> 44'00		morning rise	4290 Mar 25 00:48	19° <del>1</del> 47'05	
opposition	4284 Jul 03 19:17	14° <del>3</del> 26'10	1°18'13	retrograde	4290 Jul 05 20:59	27° <del>1</del> 02'15	
min. Earth dist.	4284 Jul 03 19:27	14° <del>3</del> 26'08	8.91734 AU	opposition	4290 Sep 14 14:45	23° <del>1</del> 41'25	-1°-43'-1
direct	4284 Sep 12 18:09	11° <del>3</del> 05'00		min. Earth dist.	4290 Sep 14 16:37	23° <del>1</del> 41'04	8.89792 AU
evening set	4284 Dec 24 16:08	18° <del>3</del> 19'06		direct	4290 Nov 23 07:02	20° <del>1</del> 22'31	
				evening set	4291 Mar 03 09:03	27° <del>1</del> 29'05	
conjunction	4285 Jan 10 11:29	20° <del>3</del> 18'27	0°51'53				
minimum elong	4285 Jan 10 11:30	20° <del>3</del> 18'27	0°51'54	conjunction	4291 Mar 20 01:34	29° <del>1</del> 28'35	-1°-33'-47
max. Earth dist.	4285 Jan 10 10:40	20° <del>3</del> 18'12	10.94282 AU	minimum elong	4291 Mar 20 01:32	29° <del>1</del> 28'34	1°33'47
morning rise	4285 Jan 27 04:32	22° <del>3</del> 17'11		max. Earth dist.	4291 Mar 19 22:59	29° <del>1</del> 27'48	10.86561 AU
retrograde	4285 May 07 08:41	29° <del>3</del> 20'34			4291 Mar 24 10:08	0° <del>1</del>	
opposition	4285 Jul 16 03:24	26° <del>3</del> 02'52	0°48'29	morning rise	4291 Apr 05 20:41	1° <del>1</del> 28'51	
min. Earth dist.	4285 Jul 16 04:42	26° <del>3</del> 02'37	8.96379 AU	retrograde	4291 Jul 18 08:43	8° <del>1</del> 50'04	
direct	4285 Sep 25 01:33	22° <del>3</del> 42'35		opposition	4291 Sep 27 02:33	5° <del>1</del> 28'03	-2°-5'-59
evening set	4286 Jan 05 08:30	29° <del>3</del> 52'08		min. Earth dist.	4291 Sep 27 04:18	5° <del>1</del> 27'43	8.83094 AU
	4286 Jan 06 11:33	0° <del>1</del>		direct	4291 Dec 05 09:11	2° <del>1</del> 08'48	
				evening set	4292 Mar 14 07:31	9° <del>1</del> 18'41	
conjunction	4286 Jan 22 02:24	1° <del>1</del> 50'42	0°26'50				
minimum elong	4286 Jan 22 02:25	1° <del>1</del> 50'42	0°26'51	conjunction	4292 Mar 31 01:20	11° <del>1</del> 19'25	-1°-50'-25
max. Earth dist.	4286 Jan 22 00:06	1° <del>1</del> 50'01	10.97947 AU	minimum elong	4292 Mar 31 01:18	11° <del>1</del> 19'24	1°50'25
morning rise	4286 Feb 07 18:58	3° <del>1</del> 48'53		max. Earth dist.	4292 Mar 30 23:51	11° <del>1</del> 18'57	10.79127 AU
retrograde	4286 May 19 06:09	10° <del>1</del> 51'48		morning rise	4292 Apr 16 22:11	13° <del>1</del> 21'05	
opposition	4286 Jul 28 10:02	7° <del>1</del> 33'59	0°17'02	retrograde	4292 Jul 30 03:07	20° <del>1</del> 49'13	
min. Earth dist.	4286 Jul 28 12:12	7° <del>1</del> 33'35	8.99021 AU	opposition	4292 Oct 08 17:28	17° <del>1</del> 25'57	-2°-23'-56
direct	4286 Oct 07 05:08	4° <del>1</del> 14'25		min. Earth dist.	4292 Oct 08 18:19	17° <del>1</del> 25'47	8.75050 AU
evening set	4287 Jan 16 22:19	11° <del>1</del> 20'45		direct	4292 Dec 16 14:44	14° <del>1</del> 06'10	
				evening set	4293 Mar 26 11:43	21° <del>1</del> 20'32	
conjunction	4287 Feb 02 15:13	13° <del>1</del> 18'51	0°00'50				
minimum elong	4287 Feb 02 15:13	13° <del>1</del> 18'51	0°00'51	conjunction	4293 Apr 12 07:27	23° <del>1</del> 22'51	-2°-2'-28
behind sun begin	4287 Feb 02 08:14	13° <del>1</del> 16'49		minimum elong	4293 Apr 12 07:26	23° <del>1</del> 22'51	2°02'28
behind sun end	4287 Feb 02 22:11	13° <del>1</del> 20'54		max. Earth dist.	4293 Apr 12 06:44	23° <del>1</del> 22'38	10.70501 AU
max. Earth dist.	4287 Feb 02 12:16	13° <del>1</del> 18'03	10.99579 AU	morning rise	4293 Apr 29 06:39	25° <del>1</del> 26'17	
desc. node	4287 Feb 14 05:18	14° <del>1</del> 41'06			4293 Jun 10 17:30	0° <del>1</del>	
	4287 Feb 16 21:53	15° <del>1</del>		retrograde	4293 Aug 12 05:12	3° <del>1</del> 01'54	
morning rise	4287 Feb 19 07:37	15° <del>1</del> 16'48			4293 Oct 16 14:43	30° <del>1</del> <del>2</del>	
retrograde	4287 May 31 05:59	22° <del>1</del> 20'49		opposition	4293 Oct 21 12:33	29° <del>1</del> 37'24	-2°-35'-49
opposition	4287 Aug 09 16:04	19° <del>1</del> 02'34	0°-14'-57	min. Earth dist.	4293 Oct 21 12:39	29° <del>1</del> 37'23	8.65976 AU
min. Earth dist.	4287 Aug 09 18:06	19° <del>1</del> 02'12	8.99633 AU	direct	4293 Dec 28 21:39	26° <del>1</del> 16'57	
direct	4287 Oct 19 08:27	15° <del>1</del> 43'30			4294 Mar 06 15:48	0° <del>1</del>	
evening set	4288 Jan 28 10:56	22° <del>1</del> 47'54		evening set	4294 Apr 07 22:33	3° <del>1</del> 36'46	
conjunction	4288 Feb 14 03:18	24° <del>1</del> 45'52	0°-25'-12	conjunction	4294 Apr 24 20:53	5° <del>1</del> 41'00	-2°-9'-10
minimum elong	4288 Feb 14 03:17	24° <del>1</del> 45'52	0°25'13	minimum elong	4294 Apr 24 20:53	5° <del>1</del> 41'00	2°09'11
max. Earth dist.	4288 Feb 14 01:04	24° <del>1</del> 45'13	10.99176 AU	max. Earth dist.	4294 Apr 24 20:11	5° <del>1</del> 40'47	10.61042 AU
morning rise	4288 Mar 01 19:45	26° <del>1</del> 43'55		morning rise	4294 May 11 23:16	7° <del>1</del> 46'32	
	4288 Mar 31 22:52	0° <del>1</del>			4294 Aug 01 01:14	15° <del>1</del>	
retrograde	4288 Jun 11 08:13	3° <del>1</del> 50'22		retrograde	4294 Aug 25 11:36	15° <del>1</del> 29'53	
opposition	4288 Aug 20 22:15	0° <del>1</del> 31'27	0°-46'-23		4294 Sep 19 00:27	15° <del>1</del> <del>2</del>	



opposition	4294 Nov 03 12:08	12°♏04'12	-2°-40'-44	direct	4301 Mar 30 20:50	28°♏49'25	
min. Earth dist.	4294 Nov 03 12:07	12°♏04'13	8.56257 AU		4301 May 05 21:46	0°♏	
direct	4295 Jan 10 10:26	8°♏42'54		evening set	4301 Jul 12 16:22	6°♏54'10	
	4295 Apr 11 02:42	15°♏					
evening set	4295 Apr 20 17:15	16°♏09'02		conjunction	4301 Jul 30 18:17	9°♏13'27	0°-10'-22
				minimum elong	4301 Jul 30 18:18	9°♏13'27	0°10'24
conjunction	4295 May 07 18:59	18°♏15'32	-2°-9'-52	behind sun begin	4301 Jul 30 12:35	9°♏11'37	
minimum elong	4295 May 07 19:00	18°♏15'32	2°09'54	behind sun end	4301 Jul 31 00:01	9°♏15'16	
max. Earth dist.	4295 May 07 18:05	18°♏15'15	10.51168 AU	max. Earth dist.	4301 Jul 30 20:40	9°♏14'12	10.10070 AU
morning rise	4295 May 25 01:13	20°♏23'25		morning rise	4301 Aug 17 21:30	11°♏33'07	
retrograde	4295 Sep 08 00:13	28°♏14'20			4301 Sep 15 17:58	15°♏	
opposition	4295 Nov 16 16:16	24°♏47'35	-2°-37'-57	retrograde	4301 Dec 01 02:58	19°♏44'18	
min. Earth dist.	4295 Nov 16 16:30	24°♏47'33	8.46339 AU	asc. node	4301 Dec 01 23:47	19°♏44'15	
direct	4296 Jan 23 05:35	21°♏25'18		opposition	4302 Feb 06 04:06	16°♏16'06	0°06'53
evening set	4296 May 02 20:18	28°♏58'19		min. Earth dist.	4302 Feb 06 02:11	16°♏16'30	8.09749 AU
	4296 May 11 03:24	0°♏			4302 Feb 21 23:26	15°♏	
				direct	4302 Apr 14 02:04	12°♏48'04	
conjunction	4296 May 20 02:15	1°♏07'20	-2°-4'-10		4302 Jun 03 03:58	15°♏	
minimum elong	4296 May 20 02:17	1°♏07'20	2°04'12	evening set	4302 Jul 27 13:47	20°♏56'04	
max. Earth dist.	4296 May 20 02:02	1°♏07'16	10.41343 AU				
morning rise	4296 Jun 06 12:44	3°♏17'45		conjunction	4302 Aug 14 16:41	23°♏15'37	0°21'15
retrograde	4296 Sep 20 19:43	11°♏15'40		minimum elong	4302 Aug 14 16:40	23°♏15'37	0°21'15
opposition	4296 Nov 29 01:12	7°♏48'02	-2°-27'-6	max. Earth dist.	4302 Aug 14 18:49	23°♏16'18	10.10022 AU
min. Earth dist.	4296 Nov 29 00:59	7°♏48'04	8.36707 AU	morning rise	4302 Sep 01 19:41	25°♏35'10	
direct	4297 Feb 04 06:00	4°♏24'42			4302 Oct 09 19:12	0°♏	
evening set	4297 May 16 08:00	12°♏04'52		retrograde	4302 Dec 15 07:38	3°♏43'21	
				opposition	4303 Feb 20 04:12	0°♏15'49	0°45'39
conjunction	4297 Jun 02 18:40	14°♏16'29	-1°-51'-56	min. Earth dist.	4303 Feb 20 02:22	0°♏16'12	8.10893 AU
minimum elong	4297 Jun 02 18:43	14°♏16'30	1°51'58		4303 Feb 23 09:21	30°♏	
max. Earth dist.	4297 Jun 02 19:42	14°♏16'49	10.32067 AU	direct	4303 Apr 28 09:45	26°♏47'16	
morning rise	4297 Jun 20 09:34	16°♏29'28			4303 Jun 29 00:42	0°♏	
retrograde	4297 Oct 04 20:11	24°♏33'26		evening set	4303 Aug 11 11:56	4°♏56'47	
opposition	4297 Dec 12 14:39	21°♏05'06	-2°-8'-13				
min. Earth dist.	4297 Dec 12 13:29	21°♏05'20	8.27876 AU	conjunction	4303 Aug 29 14:13	7°♏15'46	0°51'30
direct	4298 Feb 17 13:29	17°♏40'42		minimum elong	4303 Aug 29 14:11	7°♏15'45	0°51'30
evening set	4298 May 30 04:43	25°♏27'59		max. Earth dist.	4303 Aug 29 16:11	7°♏16'24	10.12291 AU
				morning rise	4303 Sep 16 15:19	9°♏34'23	
conjunction	4298 Jun 16 20:13	27°♏42'09	-1°-33'-27	retrograde	4303 Dec 29 08:50	17°♏37'57	
minimum elong	4298 Jun 16 20:16	27°♏42'10	1°33'30	opposition	4304 Mar 05 02:54	14°♏11'17	1°21'29
max. Earth dist.	4298 Jun 16 22:23	27°♏42'51	10.23860 AU	min. Earth dist.	4304 Mar 05 00:57	14°♏11'41	8.14261 AU
morning rise	4298 Jul 04 15:27	29°♏57'33		direct	4304 May 11 17:29	10°♏42'29	
	4298 Jul 04 23:18	0°♏		evening set	4304 Aug 25 08:04	18°♏51'42	
retrograde	4298 Oct 19 00:59	8°♏06'07					
opposition	4298 Dec 26 08:01	4°♏37'22	-1°-41'-52	conjunction	4304 Sep 12 08:21	21°♏09'26	1°18'32
min. Earth dist.	4298 Dec 26 05:59	4°♏37'47	8.20360 AU	minimum elong	4304 Sep 12 08:18	21°♏09'25	1°18'32
direct	4299 Mar 03 02:42	1°♏11'56		max. Earth dist.	4304 Sep 12 10:07	21°♏10'00	10.16632 AU
evening set	4299 Jun 13 09:53	9°♏05'57		morning rise	4304 Sep 30 06:16	23°♏26'27	
					4304 Dec 02 18:36	0°♏	
conjunction	4299 Jul 01 05:51	11°♏22'23	-1°-9'-29	retrograde	4305 Jan 11 06:25	1°♏24'18	
minimum elong	4299 Jul 01 05:54	11°♏22'24	1°09'31		4305 Feb 20 07:59	30°♏	
max. Earth dist.	4299 Jul 01 08:22	11°♏23'12	10.17205 AU	opposition	4305 Mar 18 23:19	27°♏58'39	1°52'13
morning rise	4299 Jul 19 04:53	13°♏39'51		min. Earth dist.	4305 Mar 18 21:38	27°♏58'59	8.19548 AU
retrograde	4299 Nov 02 09:06	21°♏51'15		direct	4305 May 25 23:10	24°♏29'54	
opposition	4300 Jan 09 04:47	18°♏22'24	-1°-9'-17		4305 Aug 18 04:12	0°♏	
min. Earth dist.	4300 Jan 09 02:31	18°♏22'52	8.14611 AU	evening set	4305 Sep 08 23:49	2°♏37'10	
direct	4300 Mar 16 21:07	14°♏55'58					
evening set	4300 Jun 27 22:19	22°♏55'56		conjunction	4305 Sep 26 21:04	4°♏53'09	1°40'47
				minimum elong	4305 Sep 26 21:01	4°♏53'08	1°40'48
conjunction	4300 Jul 15 21:50	25°♏14'08	0°-41'-14	max. Earth dist.	4305 Sep 26 22:23	4°♏53'34	10.22732 AU
minimum elong	4300 Jul 15 21:52	25°♏14'09	0°41'15	morning rise	4305 Oct 14 14:57	7°♏08'06	
max. Earth dist.	4300 Jul 16 00:21	25°♏14'57	10.12508 AU	retrograde	4306 Jan 24 22:47	14°♏59'25	
morning rise	4300 Aug 02 23:38	27°♏33'04		opposition	4306 Apr 01 16:45	11°♏34'55	2°16'09
	4300 Aug 23 01:52	0°♏		min. Earth dist.	4306 Apr 01 15:41	11°♏35'08	8.26452 AU
retrograde	4300 Nov 16 18:42	5°♏45'23		direct	4306 Jun 09 03:31	8°♏06'29	
opposition	4301 Jan 23 03:54	2°♏16'44	0°-32'-16	evening set	4306 Sep 23 09:22	16°♏10'14	
min. Earth dist.	4301 Jan 23 01:45	2°♏17'10	8.10998 AU				
	4301 Feb 22 13:43	30°♏		conjunction	4306 Oct 11 02:47	18°♏24'02	1°57'08



minimum elong	4306 Oct 11 02:45	18° $\overline{24}$ '01	1°57'09	max. Earth dist.	4312 Dec 25 21:35	3° $\overline{3}$ 49'36	10.84045 AU
max. Earth dist.	4306 Oct 11 03:32	18° $\overline{24}$ '16	10.30311 AU	morning rise	4313 Jan 11 17:29	5° $\overline{3}$ 50'17	
morning rise	4306 Oct 28 16:14	20° $\overline{2}$ 36'38		retrograde	4313 Apr 21 12:48	12° $\overline{3}$ 57'26	
retrograde	4307 Feb 07 07:40	28° $\overline{2}$ 20'49		opposition	4313 Jun 29 20:10	9° $\overline{3}$ 38'59	1°30'14
opposition	4307 Apr 15 06:29	24° $\overline{2}$ 57'31	2°32'12	min. Earth dist.	4313 Jun 29 21:19	9° $\overline{3}$ 38'47	8.87450 AU
min. Earth dist.	4307 Apr 15 06:19	24° $\overline{2}$ 57'33	8.34676 AU	direct	4313 Sep 08 18:09	6° $\overline{3}$ 16'50	
direct	4307 Jun 23 05:03	21° $\overline{2}$ 29'39		evening set	4313 Dec 20 23:40	13° $\overline{3}$ 33'52	
evening set	4307 Oct 07 10:51	29° $\overline{2}$ 28'18					
	4307 Oct 11 17:28	0° $\overline{M}$		conjunction	4314 Jan 06 19:39	15° $\overline{3}$ 33'50	1°02'08
conjunction	4307 Oct 25 00:10	1° $\overline{M}$ 39'43	2°06'56	minimum elong	4314 Jan 06 19:41	15° $\overline{3}$ 33'51	1°02'08
minimum elong	4307 Oct 25 00:08	1° $\overline{M}$ 39'43	2°06'57	max. Earth dist.	4314 Jan 06 18:05	15° $\overline{3}$ 33'22	10.90406 AU
max. Earth dist.	4307 Oct 24 23:57	1° $\overline{M}$ 39'40	10.39037 AU	morning rise	4314 Jan 23 13:21	17° $\overline{3}$ 33'07	
morning rise	4307 Nov 11 09:17	3° $\overline{M}$ 49'52		retrograde	4314 May 03 12:55	24° $\overline{3}$ 37'36	
retrograde	4308 Feb 20 10:19	11° $\overline{M}$ 26'40		opposition	4314 Jul 12 05:17	21° $\overline{3}$ 19'22	1°01'34
opposition	4308 Apr 27 16:04	8° $\overline{M}$ 04'31	2°39'54	min. Earth dist.	4314 Jul 12 05:57	21° $\overline{3}$ 19'14	8.93016 AU
min. Earth dist.	4308 Apr 27 16:23	8° $\overline{M}$ 04'27	8.43832 AU	direct	4314 Sep 21 05:03	17° $\overline{3}$ 58'11	
direct	4308 Jul 06 02:00	4° $\overline{M}$ 37'23		evening set	4315 Jan 01 17:26	25° $\overline{3}$ 10'00	
evening set	4308 Oct 20 03:01	12° $\overline{M}$ 29'41		conjunction	4315 Jan 18 12:04	27° $\overline{3}$ 09'01	0°37'47
conjunction	4308 Nov 06 12:22	14° $\overline{M}$ 38'43	2°10'01	minimum elong	4315 Jan 18 12:05	27° $\overline{3}$ 09'01	0°37'48
minimum elong	4308 Nov 06 12:22	14° $\overline{M}$ 38'43	2°10'02	max. Earth dist.	4315 Jan 18 11:17	27° $\overline{3}$ 08'47	10.95165 AU
max. Earth dist.	4308 Nov 06 11:28	14° $\overline{M}$ 38'26	10.48480 AU	morning rise	4315 Feb 04 04:54	29° $\overline{3}$ 07'32	
	4308 Nov 09 08:46	15° $\overline{M}$			4315 Feb 11 19:18	0° $\approx$	
morning rise	4308 Nov 23 17:33	16° $\overline{M}$ 46'27		retrograde	4315 May 15 11:42	6° $\approx$ 10'46	
retrograde	4309 Mar 04 06:39	24° $\overline{M}$ 15'56		opposition	4315 Jul 24 12:23	2° $\approx$ 52'32	0°30'43
opposition	4309 May 10 20:54	20° $\overline{M}$ 54'48	2°39'23	min. Earth dist.	4315 Jul 24 12:27	2° $\approx$ 52'31	8.96884 AU
min. Earth dist.	4309 May 10 21:08	20° $\overline{M}$ 54'46	8.53445 AU	direct	4315 Sep 09 06:54	30° $\overline{R}$ $\overline{3}$	
direct	4309 Jul 19 17:23	17° $\overline{M}$ 28'35			4315 Oct 03 10:09	29° $\overline{3}$ 32'15	
evening set	4309 Nov 02 09:44	25° $\overline{M}$ 13'44			4315 Oct 27 06:49	0° $\approx$	
				evening set	4316 Jan 13 08:00	6° $\approx$ 40'02	
conjunction	4309 Nov 19 15:35	27° $\overline{M}$ 20'28	2°06'38	conjunction	4316 Jan 30 01:31	8° $\approx$ 38'23	0°12'06
minimum elong	4309 Nov 19 15:35	27° $\overline{M}$ 20'28	2°06'38	minimum elong	4316 Jan 30 01:32	8° $\approx$ 38'23	0°12'07
max. Earth dist.	4309 Nov 19 14:41	27° $\overline{M}$ 20'12	10.58151 AU	behind sun begin	4316 Jan 29 20:43	8° $\approx$ 36'58	
morning rise	4309 Dec 06 17:14	29° $\overline{M}$ 25'57		behind sun end	4316 Jan 30 06:20	8° $\approx$ 39'48	
	4309 Dec 11 10:50	0° $\overline{x}$		max. Earth dist.	4316 Jan 30 01:05	8° $\approx$ 38'15	10.98135 AU
retrograde	4310 Mar 16 20:33	6° $\overline{x}$ 48'31		morning rise	4316 Feb 15 17:54	10° $\approx$ 36'28	
opposition	4310 May 23 20:57	3° $\overline{x}$ 28'18	2°31'12		4316 Mar 29 02:29	15° $\approx$	
min. Earth dist.	4310 May 23 20:52	3° $\overline{x}$ 28'19	8.63033 AU	retrograde	4316 May 26 11:26	17° $\approx$ 39'51	
direct	4310 Aug 02 03:44	0° $\overline{x}$ 03'05		desc. node	4316 Jul 21 23:31	15° $\approx$ 21'46	
evening set	4310 Nov 15 07:07	7° $\overline{x}$ 40'43			4316 Jul 27 00:54	15° $\overline{R}$ $\approx$	
conjunction	4310 Dec 02 09:55	9° $\overline{x}$ 45'22	1°57'20	opposition	4316 Aug 04 18:12	14° $\approx$ 21'27	0°-1'-9
minimum elong	4310 Dec 02 09:56	9° $\overline{x}$ 45'22	1°57'20	min. Earth dist.	4316 Aug 04 18:34	14° $\approx$ 21'23	8.98914 AU
max. Earth dist.	4310 Dec 02 09:36	9° $\overline{x}$ 45'16	10.67579 AU	direct	4316 Oct 14 12:33	11° $\approx$ 01'52	
morning rise	4310 Dec 19 08:35	11° $\overline{x}$ 48'49			4316 Dec 26 05:51	15° $\approx$	
retrograde	4311 Mar 29 07:04	19° $\overline{x}$ 05'13		evening set	4317 Jan 23 20:48	18° $\approx$ 06'56	
opposition	4311 Jun 05 16:42	15° $\overline{x}$ 45'46	2°16'14	conjunction	4317 Feb 09 13:23	20° $\approx$ 04'56	0°-14'-3
min. Earth dist.	4311 Jun 05 16:41	15° $\overline{x}$ 45'46	8.72149 AU	minimum elong	4317 Feb 09 13:22	20° $\approx$ 04'56	0°14'03
direct	4311 Aug 15 06:29	12° $\overline{x}$ 21'35		behind sun begin	4317 Feb 09 09:44	20° $\approx$ 03'53	
evening set	4311 Nov 27 19:41	19° $\overline{x}$ 51'45		behind sun end	4317 Feb 09 17:00	20° $\approx$ 06'00	
conjunction	4311 Dec 14 19:49	21° $\overline{x}$ 54'33	1°42'52	max. Earth dist.	4317 Feb 09 12:13	20° $\approx$ 04'36	10.99209 AU
minimum elong	4311 Dec 14 19:51	21° $\overline{x}$ 54'34	1°42'52	morning rise	4317 Feb 26 05:46	22° $\approx$ 02'54	
max. Earth dist.	4311 Dec 14 19:38	21° $\overline{x}$ 54'30	10.76332 AU	retrograde	4317 Jun 07 11:01	29° $\approx$ 07'52	
morning rise	4311 Dec 31 16:13	23° $\overline{x}$ 56'18		opposition	4317 Aug 16 23:54	25° $\approx$ 49'05	0°-32'-55
	4312 Mar 04 01:58	0° $\overline{3}$		min. Earth dist.	4317 Aug 17 00:53	25° $\approx$ 48'54	8.99027 AU
retrograde	4312 Apr 09 12:44	1° $\overline{3}$ 07'30		direct	4317 Oct 26 11:55	22° $\approx$ 30'02	
	4312 May 16 18:13	30° $\overline{R}$ $\overline{x}$		evening set	4318 Feb 04 09:10	29° $\approx$ 33'43	
opposition	4312 Jun 17 08:19	27° $\overline{x}$ 48'38	1°55'31		4318 Feb 08 03:17	0° $\overline{H}$	
min. Earth dist.	4312 Jun 17 09:01	27° $\overline{x}$ 48'30	8.80401 AU	conjunction	4318 Feb 21 01:08	1° $\overline{H}$ 31'40	0°-39'-34
direct	4312 Aug 27 02:04	24° $\overline{x}$ 25'30		minimum elong	4318 Feb 21 01:07	1° $\overline{H}$ 31'40	0°39'35
	4312 Nov 23 04:47	0° $\overline{3}$		max. Earth dist.	4318 Feb 20 23:39	1° $\overline{H}$ 31'14	10.98349 AU
evening set	4312 Dec 09 00:50	1° $\overline{3}$ 48'41		morning rise	4318 Mar 09 17:51	3° $\overline{H}$ 29'50	
conjunction	4312 Dec 25 22:39	3° $\overline{3}$ 49'55	1°24'09	retrograde	4318 Jun 19 12:26	10° $\overline{H}$ 37'48	
minimum elong	4312 Dec 25 22:42	3° $\overline{3}$ 49'56	1°24'09	opposition	4318 Aug 29 06:14	7° $\overline{H}$ 18'25	-1°-3'-27
				min. Earth dist.	4318 Aug 29 06:56	7° $\overline{H}$ 18'17	8.97224 AU



direct	4318 Nov 07 11:56	3° <del>✕</del> 59'43		conjunction	4325 May 15 10:37	25° <del>✕</del> 32'43	-2°-7'-21
evening set	4319 Feb 15 22:39	11° <del>✕</del> 03'20		minimum elong	4325 May 15 10:38	25° <del>✕</del> 32'44	2°07'22
				max. Earth dist.	4325 May 15 10:29	25° <del>✕</del> 32'41	10.49086 AU
conjunction	4319 Mar 04 14:35	13° <del>✕</del> 01'35	-1°-3'-36	morning rise	4325 Jun 01 18:42	27° <del>✕</del> 41'28	
minimum elong	4319 Mar 04 14:33	13° <del>✕</del> 01'35	1°03'37		4325 Jun 21 09:12	0° <del>Π</del>	
max. Earth dist.	4319 Mar 04 14:01	13° <del>✕</del> 01'25	10.95589 AU	retrograde	4325 Sep 15 22:41	5° <del>Π</del> 34'35	
morning rise	4319 Mar 21 07:49	15° <del>✕</del> 00'16		opposition	4325 Nov 24 08:36	2° <del>Π</del> 08'01	-2°-32'-40
retrograde	4319 Jul 01 19:58	22° <del>✕</del> 12'30		min. Earth dist.	4325 Nov 24 08:17	2° <del>Π</del> 08'05	8.44221 AU
opposition	4319 Sep 10 13:54	18° <del>✕</del> 52'19	-1°-31'-37		4325 Dec 23 16:38	30° <del>R</del> <del>✕</del>	
min. Earth dist.	4319 Sep 10 13:50	18° <del>✕</del> 52'20	8.93575 AU	direct	4326 Jan 30 16:59	28° <del>✕</del> 45'52	
direct	4319 Nov 19 11:50	15° <del>✕</del> 33'47			4326 Mar 09 01:07	0° <del>Π</del>	
evening set	4320 Feb 27 14:41	22° <del>✕</del> 38'38		evening set	4326 May 11 13:26	6° <del>Π</del> 21'04	
conjunction	4320 Mar 15 06:58	24° <del>✕</del> 37'32	-1°-25'-13	conjunction	4326 May 28 21:36	8° <del>Π</del> 31'01	-1°-58'-6
minimum elong	4320 Mar 15 06:56	24° <del>✕</del> 37'31	1°25'14	minimum elong	4326 May 28 21:38	8° <del>Π</del> 31'01	1°58'08
max. Earth dist.	4320 Mar 15 06:59	24° <del>✕</del> 37'32	10.91033 AU	max. Earth dist.	4326 May 28 21:02	8° <del>Π</del> 30'50	10.39235 AU
morning rise	4320 Apr 01 01:11	26° <del>✕</del> 37'04		morning rise	4326 Jun 15 10:13	10° <del>Π</del> 42'22	
	4320 May 02 00:08	0° <del>Υ</del>		retrograde	4326 Sep 29 19:49	18° <del>Π</del> 42'02	
retrograde	4320 Jul 13 06:14	3° <del>Υ</del> 54'39		opposition	4326 Dec 07 18:57	15° <del>Π</del> 14'35	-2°-17'-31
opposition	4320 Sep 21 23:53	0° <del>Υ</del> 33'33	-1°-56'-19	min. Earth dist.	4326 Dec 07 18:56	15° <del>Π</del> 14'35	8.34621 AU
min. Earth dist.	4320 Sep 21 23:30	0° <del>Υ</del> 33'38	8.88207 AU	direct	4327 Feb 12 20:19	11° <del>Π</del> 51'13	
	4320 Sep 29 11:50	30° <del>R</del> <del>✕</del>		evening set	4327 May 25 04:58	19° <del>Π</del> 33'41	
direct	4320 Nov 30 10:52	27° <del>✕</del> 14'58					
	4321 Jan 28 00:18	0° <del>Υ</del>		conjunction	4327 Jun 11 17:54	21° <del>Π</del> 46'15	-1°-42'-30
evening set	4321 Mar 10 10:37	4° <del>Υ</del> 22'22		minimum elong	4327 Jun 11 17:57	21° <del>Π</del> 46'16	1°42'32
				max. Earth dist.	4327 Jun 11 17:13	21° <del>Π</del> 46'02	10.30081 AU
conjunction	4321 Mar 27 03:37	6° <del>Υ</del> 22'13	-1°-43'-30	morning rise	4327 Jun 29 11:04	24° <del>Π</del> 00'08	
minimum elong	4321 Mar 27 03:35	6° <del>Υ</del> 22'12	1°43'31		4327 Aug 24 22:37	0° <del>☾</del>	
max. Earth dist.	4321 Mar 27 03:06	6° <del>Υ</del> 22'03	10.84850 AU	retrograde	4327 Oct 13 20:27	2° <del>☾</del> 05'10	
morning rise	4321 Apr 12 23:25	8° <del>Υ</del> 22'56			4327 Dec 03 16:57	30° <del>R</del> <del>Π</del>	
retrograde	4321 Jul 25 21:20	15° <del>Υ</del> 46'49		opposition	4327 Dec 21 09:23	28° <del>Π</del> 37'02	-1°-54'-38
opposition	4321 Oct 04 12:53	12° <del>Υ</del> 24'42	-2°-16'-29	min. Earth dist.	4327 Dec 21 09:33	28° <del>Π</del> 37'00	8.25989 AU
min. Earth dist.	4321 Oct 04 13:00	12° <del>Υ</del> 24'41	8.81321 AU	direct	4328 Feb 26 06:31	25° <del>Π</del> 12'24	
direct	4321 Dec 12 13:38	9° <del>Υ</del> 05'48			4328 May 12 17:09	0° <del>☾</del>	
evening set	4322 Mar 22 11:35	16° <del>Υ</del> 16'55		evening set	4328 Jun 07 05:00	3° <del>☾</del> 01'56	
conjunction	4322 Apr 08 06:02	18° <del>Υ</del> 18'07	-1°-57'-36	conjunction	4328 Jun 24 22:39	5° <del>☾</del> 16'59	-1°-21'-4
minimum elong	4322 Apr 08 06:00	18° <del>Υ</del> 18'06	1°57'37	minimum elong	4328 Jun 24 22:42	5° <del>☾</del> 16'59	1°21'05
max. Earth dist.	4322 Apr 08 05:15	18° <del>Υ</del> 17'52	10.77281 AU	max. Earth dist.	4328 Jun 24 22:35	5° <del>☾</del> 16'57	10.22160 AU
morning rise	4322 Apr 25 04:03	20° <del>Υ</del> 20'22		morning rise	4328 Jul 12 19:56	7° <del>☾</del> 33'09	
retrograde	4322 Aug 07 18:18	27° <del>Υ</del> 51'14		retrograde	4328 Oct 27 01:28	15° <del>☾</del> 42'02	
opposition	4322 Oct 17 05:30	24° <del>Υ</del> 28'00	-2°-31'-3	opposition	4329 Jan 03 03:33	12° <del>☾</del> 13'27	-1°-24'-56
min. Earth dist.	4322 Oct 17 05:52	24° <del>Υ</del> 27'56	8.73176 AU	min. Earth dist.	4329 Jan 03 03:17	12° <del>☾</del> 13'30	8.18838 AU
direct	4322 Dec 24 19:31	21° <del>Υ</del> 08'34		direct	4329 Mar 10 22:02	8° <del>☾</del> 47'36	
evening set	4323 Apr 03 18:33	28° <del>Υ</del> 24'26		evening set	4329 Jun 21 12:39	16° <del>☾</del> 43'34	
	4323 Apr 16 21:57	0° <del>✕</del>					
conjunction	4323 Apr 20 15:23	0° <del>✕</del> 27'21	-2°-6'-42	conjunction	4329 Jul 09 10:31	19° <del>☾</del> 00'43	0°-54'-45
minimum elong	4323 Apr 20 15:22	0° <del>✕</del> 27'21	2°06'43	minimum elong	4329 Jul 09 10:34	19° <del>☾</del> 00'43	0°54'47
max. Earth dist.	4323 Apr 20 15:07	0° <del>✕</del> 27'16	10.68587 AU	max. Earth dist.	4329 Jul 09 11:31	19° <del>☾</del> 01'02	10.15938 AU
morning rise	4323 May 07 16:08	2° <del>✕</del> 31'28		morning rise	4329 Jul 27 11:05	21° <del>☾</del> 18'44	
retrograde	4323 Aug 20 20:21	10° <del>✕</del> 09'44		retrograde	4329 Nov 10 09:06	29° <del>☾</del> 29'42	
opposition	4323 Oct 30 02:03	6° <del>✕</del> 45'19	-2°-39'-5	opposition	4330 Jan 17 00:31	26° <del>☾</del> 00'55	0°-49'-55
min. Earth dist.	4323 Oct 30 02:10	6° <del>✕</del> 45'18	8.64036 AU	min. Earth dist.	4330 Jan 16 23:27	26° <del>☾</del> 01'08	8.13590 AU
direct	4324 Jan 06 06:32	3° <del>✕</del> 25'09		direct	4330 Mar 24 18:39	22° <del>☾</del> 33'56	
evening set	4324 Apr 15 08:42	10° <del>✕</del> 46'45			4330 Jul 01 09:51	0° <del>♏</del>	
				evening set	4330 Jul 06 03:02	0° <del>♏</del> 35'29	
conjunction	4324 May 02 08:41	12° <del>✕</del> 51'44	-2°-10'-7	conjunction	4330 Jul 24 04:04	2° <del>♏</del> 54'08	0°-25'-1
minimum elong	4324 May 02 08:41	12° <del>✕</del> 51'44	2°10'09	minimum elong	4330 Jul 24 04:05	2° <del>♏</del> 54'09	0°25'02
max. Earth dist.	4324 May 02 08:53	12° <del>✕</del> 51'48	10.59054 AU	max. Earth dist.	4330 Jul 24 05:40	2° <del>♏</del> 54'39	10.11780 AU
morning rise	4324 May 19 12:44	14° <del>✕</del> 58'01		morning rise	4330 Aug 11 06:40	5° <del>♏</del> 13'20	
	4324 May 19 19:17	15° <del>✕</del>		retrograde	4330 Nov 24 17:06	13° <del>♏</del> 24'25	
retrograde	4324 Sep 02 06:03	22° <del>✕</del> 43'50		opposition	4331 Jan 30 23:09	9° <del>♏</del> 55'46	0°-11'-37
opposition	4324 Nov 11 02:52	19° <del>✕</del> 18'17	-2°-39'-49	min. Earth dist.	4331 Jan 30 21:41	9° <del>♏</del> 56'04	8.10555 AU
min. Earth dist.	4324 Nov 11 02:34	19° <del>✕</del> 18'21	8.54222 AU	direct	4331 Apr 07 20:15	6° <del>♏</del> 27'49	
direct	4325 Jan 17 21:32	15° <del>✕</del> 57'12		asc. node	4331 May 23 08:29	8° <del>♏</del> 18'12	
evening set	4325 Apr 28 06:50	23° <del>✕</del> 25'21		evening set	4331 Jul 20 22:06	14° <del>♏</del> 33'42	



	4331 Jul 24 09:00	15°♏		evening set	4337 Oct 14 00:18	6°♍33'57	
conjunction	4331 Aug 08 00:50	16°♏53'07	0°06'26	conjunction	4337 Oct 31 11:47	8°♍44'12	2°09'20
minimum elong	4331 Aug 08 00:50	16°♏53'07	0°06'25	minimum elong	4337 Oct 31 11:46	8°♍44'12	2°09'21
behind sun begin	4331 Aug 07 17:55	16°♏50'54		max. Earth dist.	4337 Oct 31 12:59	8°♍44'34	10.43264 AU
behind sun end	4331 Aug 08 07:44	16°♏55'19		morning rise	4337 Nov 17 18:47	10°♍53'07	
max. Earth dist.	4331 Aug 08 02:33	16°♏53'39	10.09927 AU		4337 Dec 24 09:24	15°♍	
morning rise	4331 Aug 26 03:56	19°♏12'41		retrograde	4338 Feb 26 14:01	18°♍26'11	
retrograde	4331 Dec 08 23:16	27°♏22'02		opposition	4338 May 04 23:21	15°♍04'18	2°40'35
opposition	4332 Feb 13 22:39	23°♏53'48	0°27'30	min. Earth dist.	4338 May 04 22:36	15°♍04'27	8.48305 AU
min. Earth dist.	4332 Feb 13 21:11	23°♏54'06	8.09907 AU		4338 May 05 21:13	15°♍	
direct	4332 Apr 21 00:43	20°♏25'07		direct	4338 Jul 13 14:08	11°♍37'27	
evening set	4332 Aug 03 19:15	28°♏33'43			4338 Sep 17 06:05	15°♍	
	4332 Aug 15 01:30	0°♎		evening set	4338 Oct 27 11:39	19°♍26'10	
conjunction	4332 Aug 21 22:03	0°♎53'04	0°37'26	conjunction	4338 Nov 13 19:16	21°♍34'03	2°08'58
minimum elong	4332 Aug 21 22:01	0°♎53'03	0°37'26	minimum elong	4338 Nov 13 19:16	21°♍34'03	2°08'58
max. Earth dist.	4332 Aug 21 23:31	0°♎53'32	10.10480 AU	max. Earth dist.	4338 Nov 13 19:55	21°♍34'15	10.53156 AU
morning rise	4332 Sep 09 00:08	3°♎12'12		morning rise	4338 Nov 30 22:28	23°♍40'37	
retrograde	4332 Dec 22 02:56	11°♎18'05			4339 Feb 03 17:28	0°♎	
opposition	4333 Feb 26 21:42	7°♎50'32	1°04'58	retrograde	4339 Mar 11 06:44	1°♎06'32	
min. Earth dist.	4333 Feb 26 20:43	7°♎50'45	8.11679 AU		4339 Apr 16 13:00	30°♎	
direct	4333 May 05 07:01	4°♎21'22		opposition	4339 May 18 01:49	27°♍45'50	2°35'56
evening set	4333 Aug 18 16:10	12°♎30'55		min. Earth dist.	4339 May 18 01:44	27°♍45'51	8.58251 AU
				direct	4339 Jul 27 02:49	24°♍20'06	
conjunction	4333 Sep 05 17:33	14°♎49'25	1°06'10		4339 Oct 23 04:27	0°♎	
minimum elong	4333 Sep 05 17:31	14°♎49'24	1°06'10	evening set	4339 Nov 09 13:39	2°♎01'29	
max. Earth dist.	4333 Sep 05 18:20	14°♎49'40	10.13398 AU				
morning rise	4333 Sep 23 17:14	17°♎07'21		conjunction	4339 Nov 26 17:48	4°♎07'08	2°02'23
retrograde	4334 Jan 05 02:20	25°♎08'15		minimum elong	4339 Nov 26 17:49	4°♎07'09	2°02'23
opposition	4334 Mar 12 19:00	21°♎41'36	1°38'20	max. Earth dist.	4339 Nov 26 17:38	4°♎07'05	10.63053 AU
min. Earth dist.	4334 Mar 12 18:21	21°♎41'44	8.15746 AU	morning rise	4339 Dec 13 17:55	6°♎11'34	
direct	4334 May 19 13:48	18°♎12'16		retrograde	4340 Mar 22 18:41	13°♎30'56	
evening set	4334 Sep 02 10:09	26°♎20'54		opposition	4340 May 29 23:47	10°♎11'16	2°24'02
				min. Earth dist.	4340 May 29 23:55	10°♎11'14	8.67958 AU
conjunction	4334 Sep 20 08:53	28°♎37'52	1°30'50	direct	4340 Aug 08 09:27	6°♎46'44	
minimum elong	4334 Sep 20 08:50	28°♎37'51	1°30'51	evening set	4340 Nov 21 06:37	14°♎20'36	
max. Earth dist.	4334 Sep 20 09:16	28°♎38'00	10.18490 AU				
	4334 Oct 01 02:01	0°♎		conjunction	4340 Dec 08 07:55	16°♎24'17	1°50'15
morning rise	4334 Oct 08 05:00	0°♎54'00		minimum elong	4340 Dec 08 07:57	16°♎24'17	1°50'15
retrograde	4335 Jan 18 19:42	8°♎48'45		max. Earth dist.	4340 Dec 08 07:22	16°♎24'07	10.72490 AU
opposition	4335 Mar 26 13:48	5°♎23'11	2°05'40	morning rise	4340 Dec 25 05:33	18°♎26'50	
min. Earth dist.	4335 Mar 26 12:59	5°♎23'21	8.21843 AU	retrograde	4341 Apr 04 02:13	25°♎40'30	
direct	4335 Jun 02 20:37	1°♎54'02		opposition	4341 Jun 11 17:27	22°♎21'39	2°05'53
evening set	4335 Sep 16 22:35	9°♎59'51		min. Earth dist.	4341 Jun 11 17:07	22°♎21'43	8.76969 AU
				direct	4341 Aug 21 09:31	18°♎58'20	
conjunction	4335 Oct 04 17:50	12°♎14'48	1°50'06	evening set	4341 Dec 03 15:38	26°♎24'58	
minimum elong	4335 Oct 04 17:48	12°♎14'47	1°50'06				
max. Earth dist.	4335 Oct 04 18:20	12°♎14'58	10.25442 AU	conjunction	4341 Dec 20 14:35	28°♎26'56	1°33'25
morning rise	4335 Oct 22 09:40	14°♎28'41		minimum elong	4341 Dec 20 14:38	28°♎26'56	1°33'25
retrograde	4336 Feb 01 06:47	22°♎16'32		max. Earth dist.	4341 Dec 20 14:37	28°♎26'56	10.81026 AU
opposition	4336 Apr 08 05:09	18°♎52'09	2°25'33		4342 Jan 02 12:05	0°♎	
min. Earth dist.	4336 Apr 08 03:53	18°♎52'24	8.29605 AU	morning rise	4342 Jan 06 10:08	0°♎27'54	
direct	4336 Jun 15 23:45	15°♎23'31		retrograde	4342 Apr 16 06:20	7°♎36'58	
evening set	4336 Sep 30 03:43	23°♎24'51		opposition	4342 Jun 24 07:24	4°♎18'43	1°42'36
				min. Earth dist.	4342 Jun 24 07:04	4°♎18'47	8.84882 AU
conjunction	4336 Oct 17 19:07	25°♎37'30	2°03'03	direct	4342 Sep 03 03:54	0°♎56'33	
minimum elong	4336 Oct 17 19:05	25°♎37'29	2°03'04	evening set	4342 Dec 15 17:48	8°♎16'32	
max. Earth dist.	4336 Oct 17 20:04	25°♎37'48	10.33858 AU				
morning rise	4336 Nov 04 06:26	27°♎48'55		conjunction	4343 Jan 01 14:46	10°♎17'04	1°12'50
	4336 Nov 22 12:43	0°♍		minimum elong	4343 Jan 01 14:48	10°♎17'05	1°12'50
retrograde	4337 Feb 13 13:23	5°♍29'25		max. Earth dist.	4343 Jan 01 14:48	10°♎17'05	10.88286 AU
opposition	4337 Apr 21 16:22	2°♍06'16	2°37'15	morning rise	4343 Jan 18 08:49	12°♎16'47	
min. Earth dist.	4337 Apr 21 15:00	2°♍06'33	8.38591 AU	retrograde	4343 Apr 28 08:14	19°♎22'27	
	4337 May 20 04:23	30°♍		opposition	4343 Jul 06 18:19	16°♎04'36	1°15'22
direct	4337 Jun 29 21:30	28°♎38'26		min. Earth dist.	4343 Jul 06 18:42	16°♎04'32	8.91356 AU
	4337 Aug 09 04:34	0°♍		direct	4343 Sep 15 15:47	12°♎43'27	



evening set	4343 Dec 27 14:18	19°♄57'40		opposition	4349 Sep 16 14:46	25°♄23'03	-1°-45'-20
				min. Earth dist.	4349 Sep 16 16:32	25°♄22'43	8.89751 AU
conjunction	4344 Jan 13 09:33	21°♄57'05	0°49'27	direct	4349 Nov 25 06:30	22°♄04'13	
minimum elong	4344 Jan 13 09:34	21°♄57'05	0°49'28	evening set	4350 Mar 05 08:21	29°♄10'53	
max. Earth dist.	4344 Jan 13 08:28	21°♄56'45	10.93934 AU		4350 Mar 12 06:14	0°♄	
morning rise	4344 Jan 30 02:44	23°♄55'54					
	4344 Apr 04 14:07	0°♄		conjunction	4350 Mar 22 01:00	1°♄10'24	-1°-35'-28
retrograde	4344 May 09 06:28	0°♄59'34		minimum elong	4350 Mar 22 00:57	1°♄10'23	1°35'29
	4344 Jun 13 18:27	30°♄		max. Earth dist.	4350 Mar 21 23:25	1°♄09'55	10.86542 AU
opposition	4344 Jul 18 02:43	27°♄41'50	0°45'24	morning rise	4350 Apr 07 20:05	3°♄10'41	
min. Earth dist.	4344 Jul 18 04:08	27°♄41'34	8.96069 AU	retrograde	4350 Jul 20 09:17	10°♄32'08	
direct	4344 Sep 26 23:55	24°♄21'33		opposition	4350 Sep 29 02:39	7°♄10'07	-2°-7'-48
	4344 Dec 24 21:21	0°♄		min. Earth dist.	4350 Sep 29 03:29	7°♄09'58	8.83106 AU
evening set	4345 Jan 07 06:50	1°♄31'14		direct	4350 Dec 07 09:56	3°♄50'57	
				evening set	4351 Mar 17 07:00	11°♄00'50	
conjunction	4345 Jan 24 00:43	3°♄29'50	0°24'16				
minimum elong	4345 Jan 24 00:44	3°♄29'50	0°24'17	conjunction	4351 Apr 03 00:55	13°♄01'35	-1°-51'-39
max. Earth dist.	4345 Jan 23 22:33	3°♄29'11	10.97680 AU	minimum elong	4351 Apr 03 00:53	13°♄01'34	1°51'40
morning rise	4345 Feb 09 17:24	5°♄28'04		max. Earth dist.	4351 Apr 03 00:14	13°♄01'22	10.79165 AU
retrograde	4345 May 21 05:30	12°♄31'17		morning rise	4351 Apr 19 21:47	15°♄03'17	
opposition	4345 Jul 30 09:23	9°♄13'25	0°13'52	retrograde	4351 Aug 02 04:57	22°♄31'32	
min. Earth dist.	4345 Jul 30 10:53	9°♄13'09	8.98787 AU	opposition	4351 Oct 11 17:38	19°♄08'16	-2°-25'-8
direct	4345 Oct 09 05:39	5°♄53'53		min. Earth dist.	4351 Oct 11 17:50	19°♄08'14	8.75127 AU
desc. node	4346 Jan 09 17:03	11°♄57'31		direct	4351 Dec 19 13:17	15°♄48'34	
evening set	4346 Jan 18 20:47	13°♄00'19		evening set	4352 Mar 28 11:22	23°♄02'52	
conjunction	4346 Feb 04 13:47	14°♄58'28	0°-1'-50	conjunction	4352 Apr 14 07:07	25°♄05'11	-2°-3'-11
minimum elong	4346 Feb 04 13:47	14°♄58'28	0°01'50	minimum elong	4352 Apr 14 07:06	25°♄05'10	2°03'12
behind sun begin	4346 Feb 04 06:48	14°♄56'25		max. Earth dist.	4352 Apr 14 06:11	25°♄04'53	10.70612 AU
behind sun end	4346 Feb 04 20:46	15°♄00'31		morning rise	4352 May 01 06:31	27°♄08'38	
max. Earth dist.	4346 Feb 04 11:52	14°♄57'58	10.99372 AU		4352 May 26 09:55	0°♄	
	4346 Feb 04 18:58	15°♄		retrograde	4352 Aug 14 04:44	4°♄44'14	
morning rise	4346 Feb 21 06:08	16°♄56'27		opposition	4352 Oct 23 12:38	1°♄19'45	-2°-36'-21
retrograde	4346 Jun 02 06:00	24°♄00'44		min. Earth dist.	4352 Oct 23 12:56	1°♄19'42	8.66125 AU
opposition	4346 Aug 11 15:36	20°♄42'30	0°-18'-6		4352 Nov 10 07:29	30°♄	
min. Earth dist.	4346 Aug 11 16:41	20°♄42'18	8.99447 AU	direct	4352 Dec 30 21:06	27°♄59'19	
direct	4346 Oct 21 06:48	17°♄23'31			4353 Feb 17 15:39	0°♄	
evening set	4347 Jan 30 09:37	24°♄27'59		evening set	4353 Apr 09 22:16	5°♄19'02	
conjunction	4347 Feb 16 02:00	26°♄26'00	0°-27'-44	conjunction	4353 Apr 26 20:38	7°♄23'17	-2°-9'-20
minimum elong	4347 Feb 16 01:59	26°♄26'00	0°27'45	minimum elong	4353 Apr 26 20:38	7°♄23'17	2°09'21
max. Earth dist.	4347 Feb 16 00:28	26°♄25'33	10.99009 AU	max. Earth dist.	4353 Apr 26 19:30	7°♄22'56	10.61229 AU
morning rise	4347 Mar 04 18:23	28°♄24'04		morning rise	4353 May 13 23:15	9°♄28'48	
	4347 Mar 18 21:08	0°♄			4353 Jul 06 00:57	15°♄	
retrograde	4347 Jun 14 08:04	5°♄30'50		retrograde	4353 Aug 27 11:03	17°♄12'02	
opposition	4347 Aug 23 22:06	2°♄11'57	0°-49'-23		4353 Oct 20 08:00	15°♄	
min. Earth dist.	4347 Aug 23 23:15	2°♄11'44	8.98090 AU	opposition	4353 Nov 05 12:02	13°♄46'21	-2°-40'-33
	4347 Sep 25 09:30	30°♄		min. Earth dist.	4353 Nov 05 12:29	13°♄46'16	8.56481 AU
direct	4347 Nov 02 06:56	28°♄53'15		direct	4354 Jan 12 10:50	10°♄25'02	
	4347 Dec 09 06:41	0°♄			4354 Mar 29 01:35	15°♄	
evening set	4348 Feb 10 23:05	5°♄57'09		evening set	4354 Apr 22 16:49	17°♄50'59	
conjunction	4348 Feb 27 15:01	7°♄55'19	0°-52'-36	conjunction	4354 May 09 18:45	19°♄57'29	-2°-9'-27
minimum elong	4348 Feb 27 15:00	7°♄55'19	0°52'37	minimum elong	4354 May 09 18:46	19°♄57'29	2°09'29
max. Earth dist.	4348 Feb 27 12:42	7°♄54'38	10.96662 AU	max. Earth dist.	4354 May 09 18:15	19°♄57'19	10.51430 AU
morning rise	4348 Mar 15 07:58	9°♄53'49		morning rise	4354 May 27 01:08	22°♄05'21	
retrograde	4348 Jun 25 13:12	17°♄04'17		retrograde	4354 Sep 09 23:56	29°♄56'02	
opposition	4348 Sep 04 05:27	13°♄44'33	-1°-18'-50	opposition	4354 Nov 18 15:54	26°♄29'17	-2°-37'-4
min. Earth dist.	4348 Sep 04 07:18	13°♄44'12	8.94811 AU	min. Earth dist.	4354 Nov 18 16:00	26°♄29'15	8.46635 AU
direct	4348 Nov 13 06:15	10°♄25'53		direct	4355 Jan 25 05:15	23°♄06'58	
evening set	4349 Feb 21 14:15	17°♄30'32			4355 Apr 30 09:15	0°♄	
				evening set	4355 May 05 19:42	0°♄39'43	
conjunction	4349 Mar 10 06:13	19°♄29'12	-1°-15'-29				
minimum elong	4349 Mar 10 06:11	19°♄29'11	1°15'31	conjunction	4355 May 23 01:57	2°♄48'42	-2°-3'-11
max. Earth dist.	4349 Mar 10 03:39	19°♄28'26	10.92450 AU	minimum elong	4355 May 23 01:59	2°♄48'43	2°03'13
morning rise	4349 Mar 27 00:06	21°♄28'26		max. Earth dist.	4355 May 23 02:35	2°♄48'54	10.41666 AU
retrograde	4349 Jul 07 19:42	28°♄43'51		morning rise	4355 Jun 09 12:32	4°♄59'06	



retrograde	4355 Sep 23 18:39	12°II56'40		morning rise	4361 Sep 02 17:24	27°Ω10'54	
opposition	4355 Dec 02 00:22	9°II28'59	-2°-25'-33		4361 Sep 25 23:37	0°Π	
min. Earth dist.	4355 Dec 01 23:34	9°II29'09	8.37055 AU	retrograde	4361 Dec 16 04:24	5°Π18'49	
direct	4356 Feb 07 05:59	6°II05'38		opposition	4362 Feb 21 01:07	1°Π51'19	0°48'27
evening set	4356 May 18 07:21	13°II45'29		min. Earth dist.	4362 Feb 20 22:50	1°Π51'47	8.11126 AU
					4362 Mar 16 22:08	30°RΩ	
conjunction	4356 Jun 04 18:14	15°II57'05	-1°-50'-27	direct	4362 Apr 29 06:36	28°Ω22'47	
minimum elong	4356 Jun 04 18:17	15°II57'06	1°50'29		4362 Jun 11 02:50	0°Π	
max. Earth dist.	4356 Jun 04 19:37	15°II57'31	10.32431 AU	evening set	4362 Aug 12 09:41	6°Π32'12	
morning rise	4356 Jun 22 09:13	18°II10'01					
retrograde	4356 Oct 06 18:48	26°II13'30		conjunction	4362 Aug 30 11:58	8°Π51'09	0°53'37
opposition	4356 Dec 14 13:18	22°II45'09	-2°-6'-5	minimum elong	4362 Aug 30 11:56	8°Π51'09	0°53'38
min. Earth dist.	4356 Dec 14 11:48	22°II45'27	8.28251 AU	max. Earth dist.	4362 Aug 30 14:35	8°Π52'00	10.12517 AU
direct	4357 Feb 19 12:24	19°II20'43		morning rise	4362 Sep 17 12:50	11°Π09'41	
evening set	4357 Jun 01 03:49	27°II07'38		retrograde	4362 Dec 30 06:40	19°Π13'03	
				opposition	4363 Mar 06 23:41	15°Π46'24	1°23'56
conjunction	4357 Jun 18 19:26	29°II21'46	-1°-31'-32	min. Earth dist.	4363 Mar 06 21:28	15°Π46'51	8.14495 AU
minimum elong	4357 Jun 18 19:29	29°II21'47	1°31'35	direct	4363 May 13 13:40	12°Π17'38	
max. Earth dist.	4357 Jun 18 21:03	29°II22'17	10.24243 AU	evening set	4363 Aug 27 05:46	20°Π26'48	
	4357 Jun 23 19:22	0°Ω					
morning rise	4357 Jul 06 14:48	1°Ω37'07		conjunction	4363 Sep 14 05:55	22°Π44'28	1°20'19
retrograde	4357 Oct 21 00:10	9°Ω45'08		minimum elong	4363 Sep 14 05:52	22°Π44'27	1°20'19
opposition	4357 Dec 28 06:19	6°Ω16'23	-1°-39'-16	max. Earth dist.	4363 Sep 14 08:01	22°Π45'08	10.16881 AU
min. Earth dist.	4357 Dec 28 04:37	6°Ω16'43	8.20741 AU	morning rise	4363 Oct 02 03:33	25°Π01'23	
direct	4358 Mar 05 00:21	2°Ω50'51			4363 Nov 15 07:26	0°Ω	
evening set	4358 Jun 15 08:36	10°Ω44'31		retrograde	4364 Jan 13 03:49	2°Ω58'59	
					4364 Mar 14 08:54	30°RΠ	
conjunction	4358 Jul 03 04:36	13°Ω00'54	-1°-7'-15	opposition	4364 Mar 19 20:06	29°Π33'23	1°54'10
minimum elong	4358 Jul 03 04:38	13°Ω00'55	1°07'17	min. Earth dist.	4364 Mar 19 18:46	29°Π33'39	8.19815 AU
max. Earth dist.	4358 Jul 03 06:00	13°Ω01'22	10.17587 AU	direct	4364 May 26 20:18	26°Π04'39	
morning rise	4358 Jul 21 03:50	15°Ω18'19			4364 Aug 04 11:55	0°Ω	
retrograde	4358 Nov 04 07:44	23°Ω29'09		evening set	4364 Sep 09 21:13	4°Ω11'49	
opposition	4359 Jan 11 02:41	20°Ω00'18	-1°-6'-22				
min. Earth dist.	4359 Jan 11 01:16	20°Ω00'36	8.14977 AU	conjunction	4364 Sep 27 18:10	6°Ω27'40	1°42'08
direct	4359 Mar 18 19:13	16°Ω33'47		minimum elong	4364 Sep 27 18:07	6°Ω27'39	1°42'08
evening set	4359 Jun 29 20:47	24°Ω33'28		max. Earth dist.	4364 Sep 27 19:04	6°Ω27'57	10.22997 AU
				morning rise	4364 Oct 15 11:50	8°Ω42'32	
conjunction	4359 Jul 17 20:22	26°Ω51'36	0°-38'-49	retrograde	4365 Jan 25 18:51	16°Ω33'38	
minimum elong	4359 Jul 17 20:24	26°Ω51'36	0°38'50	opposition	4365 Apr 02 13:28	13°Ω09'12	2°17'30
max. Earth dist.	4359 Jul 17 21:51	26°Ω52'05	10.12862 AU	min. Earth dist.	4365 Apr 02 13:12	13°Ω09'15	8.26704 AU
morning rise	4359 Aug 04 22:19	29°Ω10'29		direct	4365 Jun 10 00:41	9°Ω40'47	
	4359 Aug 11 12:47	0°Ω		evening set	4365 Sep 24 06:27	17°Ω44'26	
retrograde	4359 Nov 18 15:40	7°Ω22'14					
opposition	4360 Jan 25 01:19	3°Ω53'36	0°-29'-12	conjunction	4365 Oct 11 23:35	19°Ω58'08	1°57'58
min. Earth dist.	4360 Jan 24 23:52	3°Ω53'54	8.11326 AU	minimum elong	4365 Oct 11 23:33	19°Ω58'08	1°57'58
direct	4360 Mar 31 20:12	0°Ω26'13		max. Earth dist.	4365 Oct 11 23:12	19°Ω58'01	10.30520 AU
evening set	4360 Jul 13 14:32	8°Ω30'46		morning rise	4365 Oct 29 12:56	22°Ω10'41	
				retrograde	4366 Feb 08 04:06	29°Ω54'45	
conjunction	4360 Jul 31 16:31	10°Ω49'58	0°-7'-56	opposition	4366 Apr 16 03:03	26°Ω31'31	2°32'54
minimum elong	4360 Jul 31 16:32	10°Ω49'58	0°07'56	min. Earth dist.	4366 Apr 16 03:30	26°Ω31'26	8.34836 AU
behind sun begin	4360 Jul 31 09:59	10°Ω47'53		direct	4366 Jun 24 01:48	23°Ω03'41	
behind sun end	4360 Jul 31 23:05	10°Ω52'04			4366 Sep 29 18:15	0°Π	
max. Earth dist.	4360 Jul 31 18:26	10°Ω50'34	10.10374 AU	evening set	4366 Oct 08 07:44	1°Π02'20	
morning rise	4360 Aug 18 19:44	13°Ω09'33					
	4360 Sep 02 17:36	15°Ω		conjunction	4366 Oct 25 20:50	3°Π13'43	2°07'14
asc. node	4360 Nov 03 14:21	20°Ω36'30		minimum elong	4366 Oct 25 20:49	3°Π13'43	2°07'14
retrograde	4360 Dec 01 22:34	21°Ω20'20		max. Earth dist.	4366 Oct 25 19:40	3°Π13'21	10.39127 AU
opposition	4361 Feb 07 01:14	17°Ω52'10	0°09'54	morning rise	4366 Nov 12 05:54	5°Π23'50	
min. Earth dist.	4361 Feb 06 23:23	17°Ω52'32	8.10025 AU	retrograde	4367 Feb 21 06:32	13°Π00'39	
	4361 Mar 20 08:46	15°RΩ		opposition	4367 Apr 29 12:38	9°Π38'33	2°39'56
direct	4361 Apr 15 00:25	14°Ω24'06		min. Earth dist.	4367 Apr 29 12:55	9°Π38'30	8.43848 AU
	4361 May 10 12:46	15°Ω		direct	4367 Jul 07 23:05	6°Π11'30	
evening set	4361 Jul 28 11:37	22°Ω31'57		evening set	4367 Oct 21 23:48	14°Π03'54	
					4367 Oct 29 14:27	15°Π	
conjunction	4361 Aug 15 14:34	24°Ω51'27	0°23'37				
minimum elong	4361 Aug 15 14:32	24°Ω51'26	0°23'37	conjunction	4367 Nov 08 09:05	16°Π12'55	2°09'46
max. Earth dist.	4361 Aug 15 16:58	24°Ω52'13	10.10273 AU	minimum elong	4367 Nov 08 09:04	16°Π12'55	2°09'47



max. Earth dist.	4367 Nov 08 08:08	16° <del>M</del> 12'37	10.48418 AU	retrograde	4374 May 16 11:35	7° <del>≈</del> 50'38	
morning rise	4367 Nov 25 14:06	18° <del>M</del> 20'40		opposition	4374 Jul 25 11:41	4° <del>≈</del> 32'18	0°27'32
retrograde	4368 Mar 05 02:48	25° <del>M</del> 50'19		min. Earth dist.	4374 Jul 25 11:53	4° <del>≈</del> 32'16	8.96173 AU
opposition	4368 May 11 17:43	22° <del>M</del> 29'15	2°38'46	direct	4374 Oct 04 09:04	1° <del>≈</del> 11'57	
min. Earth dist.	4368 May 11 17:37	22° <del>M</del> 29'16	8.53305 AU	evening set	4375 Jan 14 06:36	8° <del>≈</del> 20'03	
direct	4368 Jul 20 15:12	19° <del>M</del> 03'07					
evening set	4368 Nov 03 06:32	26° <del>M</del> 48'25		conjunction	4375 Jan 31 00:03	10° <del>≈</del> 18'30	0°09'28
				minimum elong	4375 Jan 31 00:03	10° <del>≈</del> 18'30	0°09'29
conjunction	4368 Nov 20 12:23	28° <del>M</del> 55'12	2°05'51	behind sun begin	4375 Jan 30 18:12	10° <del>≈</del> 16'47	
minimum elong	4368 Nov 20 12:24	28° <del>M</del> 55'12	2°05'52	behind sun end	4375 Jan 31 05:54	10° <del>≈</del> 20'13	
max. Earth dist.	4368 Nov 20 12:00	28° <del>M</del> 55'05	10.57939 AU	max. Earth dist.	4375 Jan 30 23:15	10° <del>≈</del> 18'17	10.97419 AU
	4368 Nov 29 06:37	0° <del>≈</del>		morning rise	4375 Feb 16 16:32	12° <del>≈</del> 16'42	
morning rise	4368 Dec 07 13:53	1° <del>≈</del> 00'42			4375 Mar 13 08:27	15° <del>≈</del>	
retrograde	4369 Mar 17 19:19	8° <del>≈</del> 23'34		retrograde	4375 May 28 10:43	19° <del>≈</del> 20'34	
opposition	4369 May 24 18:05	5° <del>≈</del> 03'25	2°29'57	desc. node	4375 Jun 15 21:38	19° <del>≈</del> 03'59	
min. Earth dist.	4369 May 24 18:11	5° <del>≈</del> 03'23	8.62747 AU	opposition	4375 Aug 06 18:03	16° <del>≈</del> 02'03	0°-4'-23
direct	4369 Aug 02 23:40	1° <del>≈</del> 38'15		min. Earth dist.	4375 Aug 06 18:45	16° <del>≈</del> 01'55	8.98203 AU
evening set	4369 Nov 16 04:09	9° <del>≈</del> 16'08			4375 Aug 20 22:09	15° <del>≈</del>	
				direct	4375 Oct 16 10:49	12° <del>≈</del> 42'23	
conjunction	4369 Dec 03 06:55	11° <del>≈</del> 20'51	1°56'04		4375 Dec 09 14:27	15° <del>≈</del>	
minimum elong	4369 Dec 03 06:56	11° <del>≈</del> 20'52	1°56'04	evening set	4376 Jan 25 19:39	19° <del>≈</del> 47'44	
max. Earth dist.	4369 Dec 03 06:32	11° <del>≈</del> 20'45	10.67227 AU				
morning rise	4369 Dec 20 05:32	13° <del>≈</del> 24'23		conjunction	4376 Feb 11 12:12	21° <del>≈</del> 45'49	0°-16'-39
retrograde	4370 Mar 30 04:52	20° <del>≈</del> 41'06		minimum elong	4376 Feb 11 12:11	21° <del>≈</del> 45'49	0°16'40
opposition	4370 Jun 06 14:14	17° <del>≈</del> 21'43	2°14'25	max. Earth dist.	4376 Feb 11 10:58	21° <del>≈</del> 45'28	10.98508 AU
min. Earth dist.	4370 Jun 06 15:04	17° <del>≈</del> 21'33	8.71735 AU	morning rise	4376 Feb 28 04:45	23° <del>≈</del> 43'54	
direct	4370 Aug 16 02:22	13° <del>≈</del> 57'34			4376 May 07 14:58	0° <del>≈</del>	
evening set	4370 Nov 28 17:03	21° <del>≈</del> 28'03		retrograde	4376 Jun 08 10:00	0° <del>≈</del> 49'22	
					4376 Jul 10 20:42	30° <del>≈</del>	
conjunction	4370 Dec 15 17:03	23° <del>≈</del> 30'57	1°41'10	opposition	4376 Aug 18 00:01	27° <del>≈</del> 30'25	0°-36'-4
minimum elong	4370 Dec 15 17:06	23° <del>≈</del> 30'57	1°41'10	min. Earth dist.	4376 Aug 18 00:37	27° <del>≈</del> 30'19	8.98344 AU
max. Earth dist.	4370 Dec 15 15:57	23° <del>≈</del> 30'36	10.75860 AU	direct	4376 Oct 27 12:26	24° <del>≈</del> 11'17	
morning rise	4371 Jan 01 13:33	25° <del>≈</del> 32'47			4377 Jan 25 08:35	0° <del>≈</del>	
	4371 Feb 12 10:41	0° <del>≈</del>		evening set	4377 Feb 05 08:22	1° <del>≈</del> 15'14	
retrograde	4371 Apr 11 09:11	2° <del>≈</del> 44'24					
	4371 Jun 11 15:27	30° <del>≈</del>		conjunction	4377 Feb 22 00:27	3° <del>≈</del> 13'17	0°-42'-3
opposition	4371 Jun 19 06:18	29° <del>≈</del> 25'33	1°53'12	minimum elong	4377 Feb 22 00:26	3° <del>≈</del> 13'16	0°42'05
min. Earth dist.	4371 Jun 19 07:25	29° <del>≈</del> 25'21	8.79878 AU	max. Earth dist.	4377 Feb 21 23:57	3° <del>≈</del> 13'08	10.97681 AU
direct	4371 Aug 29 00:38	26° <del>≈</del> 02'25		morning rise	4377 Mar 10 17:09	5° <del>≈</del> 11'31	
	4371 Nov 09 16:32	0° <del>≈</del>		retrograde	4377 Jun 20 13:52	12° <del>≈</del> 19'57	
evening set	4371 Dec 10 22:24	3° <del>≈</del> 25'58		opposition	4377 Aug 30 06:30	9° <del>≈</del> 00'24	-1°-6'-23
				min. Earth dist.	4377 Aug 30 06:12	9° <del>≈</del> 00'28	8.96582 AU
conjunction	4371 Dec 27 20:12	5° <del>≈</del> 27'17	1°22'05	direct	4377 Nov 08 12:28	5° <del>≈</del> 41'39	
minimum elong	4371 Dec 27 20:14	5° <del>≈</del> 27'18	1°22'06	evening set	4378 Feb 16 22:13	12° <del>≈</del> 45'29	
max. Earth dist.	4371 Dec 27 18:45	5° <del>≈</del> 26'51	10.83478 AU				
morning rise	4372 Jan 13 15:08	7° <del>≈</del> 27'45		conjunction	4378 Mar 05 14:13	14° <del>≈</del> 43'49	-1°-5'-52
retrograde	4372 Apr 22 11:56	14° <del>≈</del> 35'23		minimum elong	4378 Mar 05 14:11	14° <del>≈</del> 43'49	1°05'53
opposition	4372 Jun 30 18:37	11° <del>≈</del> 16'54	1°27'31	max. Earth dist.	4378 Mar 05 14:26	14° <del>≈</del> 43'53	10.94970 AU
min. Earth dist.	4372 Jun 30 19:17	11° <del>≈</del> 16'47	8.86842 AU	morning rise	4378 Mar 22 07:26	16° <del>≈</del> 42'35	
direct	4372 Sep 09 16:48	7° <del>≈</del> 54'46		retrograde	4378 Jul 02 20:30	23° <del>≈</del> 55'13	
evening set	4372 Dec 21 21:24	15° <del>≈</del> 12'06		opposition	4378 Sep 11 14:32	20° <del>≈</del> 34'54	-1°-34'-12
				min. Earth dist.	4378 Sep 11 13:57	20° <del>≈</del> 35'01	8.92994 AU
conjunction	4373 Jan 07 17:32	17° <del>≈</del> 12'11	0°59'47	direct	4378 Nov 20 10:35	17° <del>≈</del> 16'19	
minimum elong	4373 Jan 07 17:34	17° <del>≈</del> 12'12	0°59'47	evening set	4379 Feb 28 14:34	24° <del>≈</del> 21'23	
max. Earth dist.	4373 Jan 07 16:42	17° <del>≈</del> 11'56	10.89765 AU				
morning rise	4373 Jan 24 11:15	19° <del>≈</del> 11'34		conjunction	4379 Mar 17 06:47	26° <del>≈</del> 20'20	-1°-27'-9
retrograde	4373 May 04 11:45	26° <del>≈</del> 16'33		minimum elong	4379 Mar 17 06:44	26° <del>≈</del> 20'19	1°27'10
opposition	4373 Jul 13 04:07	22° <del>≈</del> 58'13	0°58'34	max. Earth dist.	4379 Mar 17 06:40	26° <del>≈</del> 20'18	10.90492 AU
min. Earth dist.	4373 Jul 13 04:09	22° <del>≈</del> 58'13	8.92342 AU	morning rise	4379 Apr 03 01:09	28° <del>≈</del> 19'56	
direct	4373 Sep 22 02:53	19° <del>≈</del> 37'02			4379 Apr 17 15:45	0° <del>≈</del>	
evening set	4374 Jan 02 15:37	26° <del>≈</del> 49'10		retrograde	4379 Jul 15 07:07	5° <del>≈</del> 37'54	
				opposition	4379 Sep 24 00:48	2° <del>≈</del> 16'41	-1°-58'-27
conjunction	4374 Jan 19 10:19	28° <del>≈</del> 48'17	0°35'14	min. Earth dist.	4379 Sep 24 00:36	2° <del>≈</del> 16'44	8.87717 AU
minimum elong	4374 Jan 19 10:20	28° <del>≈</del> 48'17	0°35'15		4379 Oct 27 13:01	30° <del>≈</del>	
max. Earth dist.	4374 Jan 19 10:08	28° <del>≈</del> 48'14	10.94468 AU	direct	4379 Dec 02 11:19	28° <del>≈</del> 58'01	
	4374 Jan 29 11:28	0° <del>≈</del>			4380 Jan 06 14:34	0° <del>≈</del>	
morning rise	4374 Feb 05 03:08	0° <del>≈</del> 46'54		evening set	4380 Mar 11 10:48	6° <del>≈</del> 05'36	



conjunction	4380 Mar 28 03:49	8°Υ05'31	-1°-45'-1		4386 Aug 06 23:16	0°☿	
minimum elong	4380 Mar 28 03:47	8°Υ05'31	1°45'01	retrograde	4386 Oct 14 20:41	3°☿47'50	
max. Earth dist.	4380 Mar 28 03:14	8°Υ05'21	10.84415 AU	opposition	4386 Dec 22 09:13	0°☿19'48	-1°-52'-4
morning rise	4380 Apr 13 23:50	10°Υ06'19		min. Earth dist.	4386 Dec 22 09:10	0°☿19'48	8.26552 AU
retrograde	4380 Jul 26 22:02	17°Υ30'29			4386 Dec 26 11:43	30°♄II	
opposition	4380 Oct 05 13:48	14°Υ08'17	-2°-18'-2	direct	4387 Feb 27 06:18	26°♄II55'14	
min. Earth dist.	4380 Oct 05 13:56	14°Υ08'15	8.80948 AU		4387 Apr 28 03:46	0°☿	
direct	4380 Dec 13 14:01	10°Υ49'19		evening set	4387 Jun 09 05:10	4°☿44'27	
evening set	4381 Mar 23 11:56	18°Υ00'36					
conjunction	4381 Apr 09 06:35	20°Υ01'51	-1°-58'-36	conjunction	4387 Jun 26 23:07	6°☿59'27	-1°-18'-50
minimum elong	4381 Apr 09 06:33	20°Υ01'51	1°58'37	minimum elong	4387 Jun 26 23:10	6°☿59'28	1°18'52
max. Earth dist.	4381 Apr 09 06:45	20°Υ01'54	10.76971 AU	max. Earth dist.	4387 Jun 26 23:47	6°☿59'40	10.22748 AU
morning rise	4381 Apr 26 04:40	22°Υ04'10		morning rise	4387 Jul 14 20:27	9°☿15'35	
retrograde	4381 Aug 08 18:21	29°Υ35'16		retrograde	4387 Oct 29 01:29	17°☿23'57	
opposition	4381 Oct 18 06:25	26°Υ11'57	-2°-31'-56	opposition	4388 Jan 05 02:55	13°☿55'28	-1°-21'-58
min. Earth dist.	4381 Oct 18 05:57	26°Υ12'02	8.72942 AU	min. Earth dist.	4388 Jan 05 02:09	13°☿55'37	8.19441 AU
direct	4381 Dec 25 20:53	22°Υ52'30		direct	4388 Mar 11 21:42	10°☿29'42	
	4382 Apr 03 14:40	0°♄		evening set	4388 Jun 22 12:41	18°☿25'22	
evening set	4382 Apr 04 19:02	0°♄08'29		conjunction	4388 Jul 10 10:41	20°☿42'27	0°-52'-15
conjunction	4382 Apr 21 16:06	2°♄11'27	-2°-7'-9	minimum elong	4388 Jul 10 10:44	20°☿42'27	0°52'17
minimum elong	4382 Apr 21 16:05	2°♄11'27	2°07'09	max. Earth dist.	4388 Jul 10 11:54	20°☿42'50	10.16548 AU
max. Earth dist.	4382 Apr 21 17:02	2°♄11'44	10.68434 AU	morning rise	4388 Jul 28 11:13	23°☿00'22	
morning rise	4382 May 08 16:54	4°♄15'37			4388 Oct 05 18:21	0°♄	
retrograde	4382 Aug 21 22:37	11°♄54'01		retrograde	4388 Nov 11 08:19	1°♄10'48	
opposition	4382 Oct 31 02:58	8°♄29'33	-2°-39'-15		4388 Dec 18 04:11	30°♄☿	
min. Earth dist.	4382 Oct 31 02:02	8°♄29'44	8.63985 AU	opposition	4389 Jan 17 23:29	27°☿42'09	0°-46'-42
direct	4383 Jan 07 07:00	5°♄09'24		min. Earth dist.	4389 Jan 17 22:19	27°☿42'23	8.14202 AU
evening set	4383 Apr 17 09:24	12°♄30'59		direct	4389 Mar 25 18:13	24°☿15'15	
conjunction	4383 May 04 09:32	14°♄36'00	-2°-9'-58	evening set	4389 Jun 18 11:40	0°♄	
minimum elong	4383 May 04 09:32	14°♄36'00	2°09'59		4389 Jul 07 02:49	2°♄16'29	
max. Earth dist.	4383 May 04 10:09	14°♄36'11	10.59113 AU	conjunction	4389 Jul 25 03:49	4°♄35'03	0°-22'-24
	4383 May 07 15:19	15°♄		minimum elong	4389 Jul 25 03:50	4°♄35'03	0°22'26
morning rise	4383 May 21 13:48	16°♄42'20		max. Earth dist.	4389 Jul 25 04:53	4°♄35'24	10.12392 AU
retrograde	4383 Sep 04 08:12	24°♄28'02		morning rise	4389 Aug 12 06:22	6°♄54'08	
opposition	4383 Nov 13 03:41	21°♄02'31	-2°-39'-13		4389 Nov 16 11:11	15°♄	
min. Earth dist.	4383 Nov 13 03:01	21°♄02'39	8.54392 AU	retrograde	4389 Nov 25 15:47	15°♄04'41	
direct	4384 Jan 19 20:51	17°♄41'26			4389 Dec 04 20:49	15°♄♄	
evening set	4384 Apr 29 07:35	25°♄09'28		opposition	4390 Jan 31 21:50	11°♄36'11	0°-8'-22
conjunction	4384 May 16 11:29	27°♄16'49	-2°-6'-35	min. Earth dist.	4390 Jan 31 20:54	11°♄36'22	8.11161 AU
minimum elong	4384 May 16 11:30	27°♄16'50	2°06'36	direct	4390 Apr 08 18:27	8°♄08'17	
max. Earth dist.	4384 May 16 10:57	27°♄16'40	10.49359 AU	asc. node	4390 Apr 23 01:26	8°♄19'38	
morning rise	4384 Jun 02 19:53	29°♄25'35		evening set	4390 Jul 12 00:06	15°♄	
	4384 Jun 07 13:30	0°♄			4390 Jul 21 21:35	16°♄13'52	
retrograde	4384 Sep 16 22:54	7°♄18'24		conjunction	4390 Aug 09 00:10	18°♄33'10	0°08'59
opposition	4384 Nov 25 09:10	3°♄51'54	-2°-31'-21	minimum elong	4390 Aug 09 00:10	18°♄33'10	0°08'59
min. Earth dist.	4384 Nov 25 09:15	3°♄51'53	8.44576 AU	behind sun begin	4390 Aug 08 17:56	18°♄31'11	
direct	4385 Jan 31 17:52	0°♄29'46		behind sun end	4390 Aug 09 06:24	18°♄35'10	
evening set	4385 May 12 14:00	8°♄04'46		max. Earth dist.	4390 Aug 09 00:49	18°♄33'22	10.10522 AU
conjunction	4385 May 29 22:21	10°♄14'42	-1°-56'-46	morning rise	4390 Aug 27 03:16	20°♄52'38	
minimum elong	4385 May 29 22:23	10°♄14'43	1°56'48	retrograde	4390 Dec 09 22:24	29°♄01'27	
max. Earth dist.	4385 May 29 21:40	10°♄14'29	10.39664 AU	opposition	4391 Feb 14 20:59	25°♄33'22	0°30'37
morning rise	4385 Jun 16 11:14	12°♄26'02		min. Earth dist.	4391 Feb 14 20:27	25°♄33'28	8.10487 AU
retrograde	4385 Sep 30 19:02	20°♄25'20		direct	4391 Apr 22 23:00	22°♄04'42	
opposition	4385 Dec 08 19:11	16°♄57'58	-2°-15'-31		4391 Aug 04 01:05	0°♄	
min. Earth dist.	4385 Dec 08 19:28	16°♄57'55	8.35103 AU	evening set	4391 Aug 05 18:32	0°♄13'03	
direct	4386 Feb 13 21:22	13°♄34'39		conjunction	4391 Aug 23 21:08	2°♄32'16	0°39'49
evening set	4386 May 26 05:17	21°♄16'50		minimum elong	4391 Aug 23 21:06	2°♄32'16	0°39'49
conjunction	4386 Jun 12 18:30	23°♄29'23	-1°-40'-40	max. Earth dist.	4391 Aug 23 21:22	2°♄32'21	10.11034 AU
minimum elong	4386 Jun 12 18:33	23°♄29'24	1°40'43	morning rise	4391 Sep 10 23:09	4°♄51'17	
max. Earth dist.	4386 Jun 12 18:21	23°♄29'20	10.30612 AU	retrograde	4391 Dec 24 00:59	12°♄56'40	
morning rise	4386 Jun 30 11:50	25°♄43'15		opposition	4392 Feb 28 19:41	9°♄29'15	1°07'45
				min. Earth dist.	4392 Feb 28 19:20	9°♄29'19	8.12206 AU
				direct	4392 May 06 06:19	6°♄00'06	



evening set	4392 Aug 19 15:04	14° $\cap$ 09'25			4398 Oct 09 04:53	0° $\nearrow$	
				evening set	4398 Nov 10 10:50	3° $\nearrow$ 36'46	
conjunction	4392 Sep 06 16:16	16° $\cap$ 27'47	1°08'14				
minimum elong	4392 Sep 06 16:13	16° $\cap$ 27'46	1°08'14	conjunction	4398 Nov 27 14:56	5° $\nearrow$ 42'26	2°01'21
max. Earth dist.	4392 Sep 06 16:22	16° $\cap$ 27'49	10.13888 AU	minimum elong	4398 Nov 27 14:57	5° $\nearrow$ 42'26	2°01'21
morning rise	4392 Sep 24 15:46	18° $\cap$ 45'36		max. Earth dist.	4398 Nov 27 14:25	5° $\nearrow$ 42'16	10.62844 AU
retrograde	4393 Jan 05 22:55	26° $\cap$ 46'05		morning rise	4398 Dec 14 15:02	7° $\nearrow$ 46'53	
opposition	4393 Mar 13 16:44	23° $\cap$ 19'31	1°40'39	retrograde	4399 Mar 24 15:39	15° $\nearrow$ 06'21	
min. Earth dist.	4393 Mar 13 16:04	23° $\cap$ 19'39	8.16199 AU	opposition	4399 May 31 21:17	11° $\nearrow$ 46'37	2°22'30
direct	4393 May 20 13:40	19° $\cap$ 50'13		min. Earth dist.	4399 May 31 20:53	11° $\nearrow$ 46'42	8.67683 AU
evening set	4393 Sep 03 08:34	27° $\cap$ 58'36		direct	4399 Aug 10 07:12	8° $\nearrow$ 22'04	
	4393 Sep 19 06:57	0° $\underline{\Delta}$		evening set	4399 Nov 23 03:41	15° $\nearrow$ 56'00	
conjunction	4393 Sep 21 07:12	0° $\underline{\Delta}$ 15'27	1°32'29	conjunction	4399 Dec 10 05:02	17° $\nearrow$ 59'43	1°48'46
minimum elong	4393 Sep 21 07:09	0° $\underline{\Delta}$ 15'26	1°32'29	minimum elong	4399 Dec 10 05:05	17° $\nearrow$ 59'44	1°48'46
max. Earth dist.	4393 Sep 21 07:39	0° $\underline{\Delta}$ 15'35	10.18895 AU	max. Earth dist.	4399 Dec 10 05:09	17° $\nearrow$ 59'45	10.72162 AU
morning rise	4393 Oct 09 03:04	2° $\underline{\Delta}$ 31'27		morning rise	4399 Dec 27 02:34	20° $\nearrow$ 02'19	
retrograde	4394 Jan 19 16:13	10° $\underline{\Delta}$ 25'53		retrograde	4400 Apr 05 00:01	27° $\nearrow$ 16'14	
opposition	4394 Mar 27 11:18	7° $\underline{\Delta}$ 00'20	2°07'24	opposition	4400 Jun 12 15:13	23° $\nearrow$ 57'19	2°03'49
min. Earth dist.	4394 Mar 27 10:14	7° $\underline{\Delta}$ 00'33	8.22198 AU	min. Earth dist.	4400 Jun 12 14:38	23° $\nearrow$ 57'26	8.76583 AU
direct	4394 Jun 03 18:52	3° $\underline{\Delta}$ 31'12		direct	4400 Aug 22 07:24	20° $\nearrow$ 34'00	
evening set	4394 Sep 17 20:46	11° $\underline{\Delta}$ 36'48		evening set	4400 Dec 04 12:48	28° $\nearrow$ 00'45	
conjunction	4394 Oct 05 15:56	13° $\underline{\Delta}$ 51'40	1°51'14	conjunction	4400 Dec 21 11:48	0° $\overline{\text{C}}$ 02'47	1°31'33
minimum elong	4394 Oct 05 15:53	13° $\underline{\Delta}$ 51'39	1°51'15	minimum elong	4400 Dec 21 11:50	0° $\overline{\text{C}}$ 02'48	1°31'33
max. Earth dist.	4394 Oct 05 16:45	13° $\underline{\Delta}$ 51'56	10.25737 AU		4400 Dec 21 02:36	0° $\overline{\text{C}}$	
morning rise	4394 Oct 23 07:26	16° $\underline{\Delta}$ 05'25		max. Earth dist.	4400 Dec 21 12:11	0° $\overline{\text{C}}$ 02'54	10.80603 AU
retrograde	4395 Feb 02 05:22	23° $\underline{\Delta}$ 53'00		morning rise	4401 Jan 07 07:19	2° $\overline{\text{C}}$ 03'49	
opposition	4395 Apr 10 02:31	20° $\underline{\Delta}$ 28'38	2°26'38	retrograde	4401 Apr 17 05:14	9° $\overline{\text{C}}$ 13'10	
min. Earth dist.	4395 Apr 10 01:24	20° $\underline{\Delta}$ 28'51	8.29840 AU	opposition	4401 Jun 25 05:23	5° $\overline{\text{C}}$ 54'55	1°40'06
direct	4395 Jun 17 20:14	16° $\underline{\Delta}$ 59'59		min. Earth dist.	4401 Jun 25 05:31	5° $\overline{\text{C}}$ 54'53	8.84421 AU
evening set	4395 Oct 02 01:39	25° $\underline{\Delta}$ 01'08		direct	4401 Sep 04 00:31	2° $\overline{\text{C}}$ 32'44	
conjunction	4395 Oct 19 16:53	27° $\underline{\Delta}$ 13'43	2°03'39	evening set	4401 Dec 16 15:14	9° $\overline{\text{C}}$ 52'56	
minimum elong	4395 Oct 19 16:51	27° $\underline{\Delta}$ 13'43	2°03'40	conjunction	4402 Jan 02 12:07	11° $\overline{\text{C}}$ 53'32	1°10'38
max. Earth dist.	4395 Oct 19 17:50	27° $\underline{\Delta}$ 14'01	10.34026 AU	minimum elong	4402 Jan 02 12:09	11° $\overline{\text{C}}$ 53'33	1°10'39
morning rise	4395 Nov 06 03:54	29° $\underline{\Delta}$ 25'03		max. Earth dist.	4402 Jan 02 11:39	11° $\overline{\text{C}}$ 53'24	10.87804 AU
	4395 Nov 10 21:55	0° $\mathbb{M}$		morning rise	4402 Jan 19 06:17	13° $\overline{\text{C}}$ 53'22	
retrograde	4396 Feb 15 11:11	7° $\mathbb{M}$ 05'21		retrograde	4402 Apr 29 05:07	20° $\overline{\text{C}}$ 59'22	
opposition	4396 Apr 22 13:50	3° $\mathbb{M}$ 42'12	2°37'38	opposition	4402 Jul 07 16:38	17° $\overline{\text{C}}$ 41'30	1°12'33
min. Earth dist.	4396 Apr 22 13:12	3° $\mathbb{M}$ 42'19	8.38698 AU	min. Earth dist.	4402 Jul 07 17:23	17° $\overline{\text{C}}$ 41'22	8.90863 AU
direct	4396 Jun 30 18:40	0° $\mathbb{M}$ 14'18		direct	4402 Sep 16 13:30	14° $\overline{\text{C}}$ 20'22	
evening set	4396 Oct 14 21:51	8° $\mathbb{M}$ 09'41		evening set	4402 Dec 28 11:55	21° $\overline{\text{C}}$ 34'51	
conjunction	4396 Nov 01 09:05	10° $\mathbb{M}$ 19'53	2°09'22	conjunction	4403 Jan 14 07:07	23° $\overline{\text{C}}$ 34'19	0°47'02
minimum elong	4396 Nov 01 09:04	10° $\mathbb{M}$ 19'53	2°09'22	minimum elong	4403 Jan 14 07:08	23° $\overline{\text{C}}$ 34'20	0°47'03
max. Earth dist.	4396 Nov 01 09:33	10° $\mathbb{M}$ 20'02	10.43303 AU	max. Earth dist.	4403 Jan 14 05:52	23° $\overline{\text{C}}$ 33'57	10.93450 AU
morning rise	4396 Nov 18 15:59	12° $\mathbb{M}$ 28'46		morning rise	4403 Jan 31 00:25	25° $\overline{\text{C}}$ 33'13	
	4396 Dec 10 02:25	15° $\mathbb{M}$			4403 Mar 14 17:48	0° $\approx$	
retrograde	4397 Feb 27 10:07	20° $\mathbb{M}$ 01'44		retrograde	4403 May 11 05:01	2° $\approx$ 37'19	
opposition	4397 May 05 20:47	16° $\mathbb{M}$ 39'50	2°40'18		4403 Jul 10 22:00	30° $\mathbb{R}$ $\overline{\text{C}}$	
min. Earth dist.	4397 May 05 20:50	16° $\mathbb{M}$ 39'49	8.48286 AU	opposition	4403 Jul 20 01:20	29° $\overline{\text{C}}$ 19'33	0°42'21
	4397 May 27 23:25	15° $\mathbb{R}$ $\mathbb{M}$		min. Earth dist.	4403 Jul 20 02:07	29° $\overline{\text{C}}$ 19'24	8.95605 AU
direct	4397 Jul 14 12:39	13° $\mathbb{M}$ 12'55		direct	4403 Sep 28 23:24	25° $\overline{\text{C}}$ 59'18	
	4397 Aug 30 06:44	15° $\mathbb{M}$			4403 Dec 11 06:48	0° $\approx$	
evening set	4397 Oct 28 09:00	21° $\mathbb{M}$ 01'35		evening set	4404 Jan 09 04:36	3° $\approx$ 09'11	
conjunction	4397 Nov 14 16:25	23° $\mathbb{M}$ 09'25	2°08'27	conjunction	4404 Jan 25 22:35	5° $\approx$ 07'52	0°21'43
minimum elong	4397 Nov 14 16:26	23° $\mathbb{M}$ 09'25	2°08'27	minimum elong	4404 Jan 25 22:36	5° $\approx$ 07'52	0°21'44
max. Earth dist.	4397 Nov 14 15:58	23° $\mathbb{M}$ 09'17	10.53071 AU	max. Earth dist.	4404 Jan 25 21:29	5° $\approx$ 07'32	10.97251 AU
morning rise	4397 Dec 01 19:39	25° $\mathbb{M}$ 15'59		morning rise	4404 Feb 11 15:15	7° $\approx$ 06'10	
	4398 Jan 14 13:09	0° $\nearrow$		retrograde	4404 May 22 04:52	14° $\approx$ 09'46	
retrograde	4398 Mar 12 03:39	2° $\nearrow$ 41'54		opposition	4404 Jul 31 08:13	10° $\approx$ 51'52	0°10'43
	4398 May 10 13:56	30° $\mathbb{R}$ $\mathbb{M}$		min. Earth dist.	4404 Jul 31 08:44	10° $\approx$ 51'46	8.98391 AU
opposition	4398 May 18 23:11	29° $\mathbb{M}$ 21'10	2°35'00	direct	4404 Oct 10 03:30	7° $\approx$ 32'22	
min. Earth dist.	4398 May 18 23:16	29° $\mathbb{M}$ 21'09	8.58104 AU	desc. node	4404 Dec 04 15:01	9° $\approx$ 56'14	
direct	4398 Jul 28 00:47	25° $\mathbb{M}$ 55'23		evening set	4405 Jan 19 18:48	14° $\approx$ 38'58	



	4405 Jan 22 18:59	15°♊		conjunction	4411 Apr 16 06:51	26°♑47'42	-2°-3'-51
				minimum elong	4411 Apr 16 06:50	26°♑47'42	2°03'52
conjunction	4405 Feb 05 11:52	16°♊37'10	0°-4'-25	max. Earth dist.	4411 Apr 16 05:35	26°♑47'19	10.70506 AU
minimum elong	4405 Feb 05 11:52	16°♊37'10	0°04'25	morning rise	4411 May 03 06:30	28°♑51'13	
behind sun begin	4405 Feb 05 05:00	16°♊35'10			4411 May 13 00:22	0°♄	
behind sun end	4405 Feb 05 18:43	16°♊39'11		retrograde	4411 Aug 16 05:07	6°♄26'57	
max. Earth dist.	4405 Feb 05 10:48	16°♊36'53	10.99004 AU	opposition	4411 Oct 25 12:55	3°♄02'27	-2°-36'-49
morning rise	4405 Feb 22 04:11	18°♊35'14		min. Earth dist.	4411 Oct 25 13:33	3°♄02'20	8.66056 AU
retrograde	4405 Jun 03 05:29	25°♊39'53			4411 Dec 14 07:07	30°♑41'59	
opposition	4405 Aug 12 14:40	22°♊21'37	0°-21'-13	direct	4412 Jan 01 21:35	29°♑41'59	
min. Earth dist.	4405 Aug 12 15:32	22°♊21'27	8.99103 AU		4412 Jan 20 08:23	0°♄	
direct	4405 Oct 22 05:07	19°♊02'39		evening set	4412 Apr 10 22:10	7°♄01'45	
evening set	4406 Jan 31 07:59	26°♊07'20					
				conjunction	4412 Apr 27 20:46	9°♄06'01	-2°-9'-25
conjunction	4406 Feb 17 00:15	28°♊05'24	0°-30'-13	minimum elong	4412 Apr 27 20:46	9°♄06'01	2°09'26
minimum elong	4406 Feb 17 00:14	28°♊05'23	0°30'14	max. Earth dist.	4412 Apr 27 20:04	9°♄05'48	10.61198 AU
max. Earth dist.	4406 Feb 16 22:27	28°♊04'52	10.98683 AU	morning rise	4412 May 14 23:33	11°♄11'36	
morning rise	4406 Mar 05 16:44	0°♋03'32			4412 Jun 18 00:57	15°♄	
	4406 Mar 05 04:35	0°♋		retrograde	4412 Aug 28 11:05	18°♄54'49	
retrograde	4406 Jun 15 07:45	7°♋10'39		opposition	4412 Nov 06 12:06	15°♄29'07	-2°-40'-18
opposition	4406 Aug 24 21:28	3°♋51'47	0°-52'-20	min. Earth dist.	4412 Nov 06 12:21	15°♄29'04	8.56491 AU
min. Earth dist.	4406 Aug 24 23:02	3°♋51'29	8.97786 AU		4412 Nov 12 18:23	15°♑♄	
direct	4406 Nov 03 05:05	0°♋33'07		direct	4413 Jan 13 10:44	12°♄07'47	
evening set	4407 Feb 11 21:41	7°♋37'13			4413 Mar 12 22:42	15°♄	
				evening set	4413 Apr 23 16:49	19°♄33'41	
conjunction	4407 Feb 28 13:33	9°♋35'26	0°-54'-54				
minimum elong	4407 Feb 28 13:31	9°♋35'25	0°54'55	conjunction	4413 May 10 19:02	21°♄40'13	-2°-8'-58
max. Earth dist.	4407 Feb 28 11:06	9°♋34'42	10.96375 AU	minimum elong	4413 May 10 19:03	21°♄40'13	2°08'59
morning rise	4407 Mar 17 06:37	11°♋34'00		max. Earth dist.	4413 May 10 19:31	21°♄40'22	10.51476 AU
retrograde	4407 Jun 27 11:16	18°♋44'51		morning rise	4413 May 28 01:31	23°♄48'06	
opposition	4407 Sep 06 05:06	15°♋25'06	-1°-21'-30		4413 Jul 28 06:14	0°♄	
min. Earth dist.	4407 Sep 06 06:46	15°♋24'47	8.94547 AU	retrograde	4413 Sep 10 23:34	1°♄38'41	
direct	4407 Nov 15 05:07	12°♋06'30			4413 Oct 26 12:01	30°♑♄	
evening set	4408 Feb 23 13:03	19°♋11'20		opposition	4413 Nov 19 15:50	28°♄11'53	-2°-36'-6
				min. Earth dist.	4413 Nov 19 15:10	28°♄12'01	8.46723 AU
conjunction	4408 Mar 11 05:09	21°♋10'04	-1°-17'-31	direct	4414 Jan 26 05:48	24°♄49'34	
minimum elong	4408 Mar 11 05:07	21°♋10'03	1°17'32		4414 Apr 16 18:31	0°♄	
max. Earth dist.	4408 Mar 11 03:27	21°♋09'33	10.92198 AU	evening set	4414 May 06 19:42	2°♄22'10	
morning rise	4408 Mar 27 23:01	23°♋09'20					
	4408 Jun 16 04:49	0°♑		conjunction	4414 May 24 02:10	4°♄31'12	-2°-2'-7
retrograde	4408 Jul 08 20:35	0°♑25'09		minimum elong	4414 May 24 02:12	4°♄31'12	2°02'09
	4408 Jul 31 18:02	30°♑♄		max. Earth dist.	4414 May 24 03:12	4°♄31'31	10.41793 AU
opposition	4408 Sep 17 14:32	27°♋04'19	-1°-47'-36	morning rise	4414 Jun 10 12:55	6°♄41'36	
min. Earth dist.	4408 Sep 17 15:27	27°♋04'09	8.89520 AU	retrograde	4414 Sep 24 18:55	14°♄38'57	
direct	4408 Nov 26 07:10	23°♋45'33		opposition	4414 Dec 03 00:09	11°♄11'13	-2°-23'-53
	4409 Feb 26 19:15	0°♑		min. Earth dist.	4414 Dec 02 22:56	11°♄11'28	8.37221 AU
evening set	4409 Mar 06 07:32	0°♑52'22		direct	4415 Feb 08 05:30	7°♄47'50	
				evening set	4415 May 20 07:25	15°♄27'29	
conjunction	4409 Mar 23 00:17	2°♑51'57	-1°-37'-7				
minimum elong	4409 Mar 23 00:14	2°♑51'56	1°37'08	conjunction	4415 Jun 06 18:28	17°♄39'05	-1°-48'-51
max. Earth dist.	4409 Mar 22 23:28	2°♑51'42	10.86321 AU	minimum elong	4415 Jun 06 18:31	17°♄39'06	1°48'53
morning rise	4409 Apr 08 19:21	4°♑52'17		max. Earth dist.	4415 Jun 06 19:19	17°♄39'21	10.32637 AU
retrograde	4409 Jul 21 10:32	12°♑14'02		morning rise	4415 Jun 24 09:44	19°♄52'03	
opposition	4409 Sep 30 02:34	8°♑52'01	-2°-9'-33	retrograde	4415 Oct 08 19:45	27°♄55'08	
min. Earth dist.	4409 Sep 30 02:48	8°♑51'58	8.82909 AU	opposition	4415 Dec 16 12:46	24°♄26'46	-2°-3'-48
direct	4409 Dec 08 08:01	5°♑32'53		min. Earth dist.	4415 Dec 16 11:38	24°♄27'00	8.28487 AU
evening set	4410 Mar 18 06:32	12°♑42'55		direct	4416 Feb 21 10:56	21°♄02'15	
				evening set	4416 Jun 02 03:47	28°♄48'59	
conjunction	4410 Apr 04 00:26	14°♑43'42	-1°-52'-50		4416 Jun 11 13:17	0°♄	
minimum elong	4410 Apr 04 00:24	14°♑43'41	1°52'51				
max. Earth dist.	4410 Apr 03 23:29	14°♑43'24	10.78991 AU	conjunction	4416 Jun 19 19:30	1°♄03'06	-1°-29'-31
morning rise	4410 Apr 20 21:26	16°♑45'26		minimum elong	4416 Jun 19 19:33	1°♄03'07	1°29'33
retrograde	4410 Aug 03 04:38	24°♑13'55		max. Earth dist.	4416 Jun 19 20:12	1°♄03'19	10.24513 AU
opposition	4410 Oct 12 17:51	20°♑50'40	-2°-26'-17	morning rise	4416 Jul 07 15:10	3°♄18'26	
min. Earth dist.	4410 Oct 12 18:13	20°♑50'35	8.74984 AU	retrograde	4416 Oct 21 23:18	11°♄25'58	
direct	4410 Dec 20 12:36	17°♑30'57		opposition	4416 Dec 29 05:30	7°♄57'13	-1°-36'-31
evening set	4411 Mar 30 11:03	24°♑45'21		min. Earth dist.	4416 Dec 29 04:31	7°♄57'25	8.21030 AU



direct	4417 Mar 06 00:31	4° $\mathring{S}$ 31'37			4423 Apr 05 08:51	30° $\mathring{R}$ $\mathring{M}$	
evening set	4417 Jun 16 08:12	12° $\mathring{S}$ 25'03		direct	4423 May 28 17:57	27° $\mathring{M}$ 41'16	
					4423 Jul 20 02:40	0° $\mathring{S}$	
conjunction	4417 Jul 04 04:21	14° $\mathring{S}$ 41'24	-1°-4'-54	evening set	4423 Sep 11 19:16	5° $\mathring{S}$ 48'15	
minimum elong	4417 Jul 04 04:24	14° $\mathring{S}$ 41'25	1°04'56				
max. Earth dist.	4417 Jul 04 05:18	14° $\mathring{S}$ 41'42	10.17900 AU	conjunction	4423 Sep 29 15:54	8° $\mathring{S}$ 03'59	1°43'28
morning rise	4417 Jul 22 03:46	16° $\mathring{S}$ 58'46		minimum elong	4423 Sep 29 15:51	8° $\mathring{S}$ 03'58	1°43'29
retrograde	4417 Nov 05 05:16	25° $\mathring{S}$ 09'07		max. Earth dist.	4423 Sep 29 15:59	8° $\mathring{S}$ 04'00	10.23418 AU
opposition	4418 Jan 12 01:28	21° $\mathring{S}$ 40'16	-1°-3'-18	morning rise	4423 Oct 17 09:25	10° $\mathring{S}$ 18'43	
min. Earth dist.	4418 Jan 12 00:25	21° $\mathring{S}$ 40'29	8.15302 AU	retrograde	4424 Jan 27 15:57	18° $\mathring{S}$ 09'27	
direct	4418 Mar 19 19:41	18° $\mathring{S}$ 13'40		opposition	4424 Apr 03 10:37	14° $\mathring{S}$ 45'05	2°18'50
evening set	4418 Jun 30 20:05	26° $\mathring{S}$ 13'05		min. Earth dist.	4424 Apr 03 10:37	14° $\mathring{S}$ 45'05	8.27148 AU
				direct	4424 Jun 10 22:15	11° $\mathring{S}$ 16'42	
conjunction	4418 Jul 18 19:52	28° $\mathring{S}$ 31'12	0°-36'-17	evening set	4424 Sep 25 03:57	19° $\mathring{S}$ 20'04	
minimum elong	4418 Jul 18 19:54	28° $\mathring{S}$ 31'12	0°36'19				
max. Earth dist.	4418 Jul 18 21:30	28° $\mathring{S}$ 31'43	10.13199 AU	conjunction	4424 Oct 12 20:50	21° $\mathring{S}$ 33'40	1°58'47
	4418 Jul 30 08:18	0° $\mathring{S}$		minimum elong	4424 Oct 12 20:48	21° $\mathring{S}$ 33'39	1°58'47
morning rise	4418 Aug 05 21:52	0° $\mathring{S}$ 50'00		max. Earth dist.	4424 Oct 12 19:59	21° $\mathring{S}$ 33'23	10.30954 AU
retrograde	4418 Nov 19 13:01	9° $\mathring{S}$ 01'18		morning rise	4424 Oct 30 10:02	23° $\mathring{S}$ 46'05	
opposition	4419 Jan 25 23:37	5° $\mathring{S}$ 32'39	0°-26'-1		4424 Dec 29 23:56	0° $\mathring{M}$	
min. Earth dist.	4419 Jan 25 22:00	5° $\mathring{S}$ 32'59	8.11662 AU	retrograde	4425 Feb 08 23:45	1° $\mathring{M}$ 29'51	
direct	4419 Apr 02 19:07	2° $\mathring{S}$ 05'14			4425 Mar 22 20:57	30° $\mathring{R}$ $\mathring{S}$	
evening set	4419 Jul 15 13:37	10° $\mathring{S}$ 09'31		opposition	4425 Apr 16 23:55	28° $\mathring{S}$ 06'40	2°33'33
				min. Earth dist.	4425 Apr 17 00:06	28° $\mathring{S}$ 06'38	8.35242 AU
conjunction	4419 Aug 02 15:45	12° $\mathring{S}$ 28'42	0°-5'-23	direct	4425 Jun 25 00:13	24° $\mathring{S}$ 38'53	
minimum elong	4419 Aug 02 15:46	12° $\mathring{S}$ 28'42	0°05'24		4425 Sep 16 23:40	0° $\mathring{M}$	
behind sun begin	4419 Aug 02 08:41	12° $\mathring{S}$ 26'26		evening set	4425 Oct 09 04:45	2° $\mathring{M}$ 37'17	
behind sun end	4419 Aug 02 22:51	12° $\mathring{S}$ 30'57					
max. Earth dist.	4419 Aug 02 18:07	12° $\mathring{S}$ 29'25	10.10708 AU	conjunction	4425 Oct 26 17:46	4° $\mathring{M}$ 48'34	2°07'29
morning rise	4419 Aug 20 18:51	14° $\mathring{S}$ 48'12		minimum elong	4425 Oct 26 17:44	4° $\mathring{M}$ 48'34	2°07'30
	4419 Aug 22 08:19	15° $\mathring{S}$		max. Earth dist.	4425 Oct 26 16:44	4° $\mathring{M}$ 48'15	10.39481 AU
asc. node	4419 Oct 05 21:56	20° $\mathring{S}$ 00'36		morning rise	4425 Nov 13 02:37	6° $\mathring{M}$ 58'36	
retrograde	4419 Dec 03 21:14	22° $\mathring{S}$ 58'33		retrograde	4426 Feb 22 02:39	14° $\mathring{M}$ 35'14	
opposition	4420 Feb 08 23:11	19° $\mathring{S}$ 30'23	0°13'02	opposition	4426 Apr 30 09:19	11° $\mathring{M}$ 13'11	2°39'55
min. Earth dist.	4420 Feb 08 20:59	19° $\mathring{S}$ 30'50	8.10349 AU	min. Earth dist.	4426 Apr 30 09:19	11° $\mathring{M}$ 13'11	8.44134 AU
direct	4420 Apr 15 22:12	16° $\mathring{S}$ 02'19		direct	4426 Jul 08 20:42	7° $\mathring{M}$ 46'12	
evening set	4420 Jul 29 10:25	24° $\mathring{S}$ 09'59			4426 Oct 17 13:32	15° $\mathring{M}$	
				evening set	4426 Oct 22 20:36	15° $\mathring{M}$ 38'26	
conjunction	4420 Aug 16 13:20	26° $\mathring{S}$ 29'24	0°26'03				
minimum elong	4420 Aug 16 13:19	26° $\mathring{S}$ 29'24	0°26'03	conjunction	4426 Nov 09 05:50	17° $\mathring{M}$ 47'24	2°09'29
max. Earth dist.	4420 Aug 16 16:08	26° $\mathring{S}$ 30'18	10.10590 AU	minimum elong	4426 Nov 09 05:50	17° $\mathring{M}$ 47'24	2°09'29
morning rise	4420 Sep 03 15:57	28° $\mathring{S}$ 48'46		max. Earth dist.	4426 Nov 09 05:18	17° $\mathring{M}$ 47'14	10.48627 AU
	4420 Sep 13 04:42	0° $\mathring{M}$		morning rise	4426 Nov 26 10:36	19° $\mathring{M}$ 55'04	
retrograde	4420 Dec 17 02:58	6° $\mathring{M}$ 56'20		retrograde	4427 Mar 07 00:46	27° $\mathring{M}$ 24'41	
opposition	4421 Feb 21 22:50	3° $\mathring{M}$ 28'53	0°51'21	opposition	4427 May 13 14:28	24° $\mathring{M}$ 03'40	2°38'05
min. Earth dist.	4421 Feb 21 20:30	3° $\mathring{M}$ 29'22	8.11440 AU	min. Earth dist.	4427 May 13 14:46	24° $\mathring{M}$ 03'36	8.53430 AU
direct	4421 Apr 30 04:31	0° $\mathring{M}$ 00'22		direct	4427 Jul 22 10:49	20° $\mathring{M}$ 37'36	
evening set	4421 Aug 13 08:14	8° $\mathring{M}$ 09'40		evening set	4427 Nov 05 03:14	28° $\mathring{M}$ 22'51	
					4427 Nov 18 08:59	0° $\mathring{S}$	
conjunction	4421 Aug 31 10:22	10° $\mathring{M}$ 28'32	0°55'49				
minimum elong	4421 Aug 31 10:19	10° $\mathring{M}$ 28'31	0°55'49	conjunction	4427 Nov 22 08:58	0° $\mathring{S}$ 29'37	2°05'03
max. Earth dist.	4421 Aug 31 12:56	10° $\mathring{M}$ 29'22	10.12833 AU	minimum elong	4427 Nov 22 08:59	0° $\mathring{S}$ 29'37	2°05'03
morning rise	4421 Sep 18 11:01	12° $\mathring{M}$ 46'58		max. Earth dist.	4427 Nov 22 08:18	0° $\mathring{S}$ 29'25	10.57979 AU
retrograde	4421 Dec 31 04:19	20° $\mathring{M}$ 50'02		morning rise	4427 Dec 09 10:19	2° $\mathring{S}$ 35'07	
opposition	4422 Mar 07 21:15	17° $\mathring{M}$ 23'30	1°26'26	retrograde	4428 Mar 18 15:58	9° $\mathring{S}$ 58'01	
min. Earth dist.	4422 Mar 07 19:32	17° $\mathring{M}$ 23'51	8.14826 AU	opposition	4428 May 25 15:05	6° $\mathring{S}$ 37'56	2°28'39
direct	4422 May 14 11:37	13° $\mathring{M}$ 54'45		min. Earth dist.	4428 May 25 16:03	6° $\mathring{S}$ 37'44	8.62705 AU
evening set	4422 Aug 28 04:07	22° $\mathring{M}$ 03'49		direct	4428 Aug 03 19:37	3° $\mathring{S}$ 12'49	
				evening set	4428 Nov 17 00:45	10° $\mathring{S}$ 50'45	
conjunction	4422 Sep 15 04:01	24° $\mathring{M}$ 21'22	1°22'08				
minimum elong	4422 Sep 15 03:58	24° $\mathring{M}$ 21'21	1°22'08	conjunction	4428 Dec 04 03:22	12° $\mathring{S}$ 55'29	1°54'46
max. Earth dist.	4422 Sep 15 05:30	24° $\mathring{M}$ 21'51	10.17235 AU	minimum elong	4428 Dec 04 03:24	12° $\mathring{S}$ 55'29	1°54'46
morning rise	4422 Oct 03 01:29	26° $\mathring{M}$ 38'11		max. Earth dist.	4428 Dec 04 01:59	12° $\mathring{S}$ 55'03	10.67099 AU
	4422 Oct 31 09:47	0° $\mathring{S}$		morning rise	4428 Dec 21 02:04	14° $\mathring{S}$ 59'03	
retrograde	4423 Jan 14 00:53	4° $\mathring{S}$ 35'29		retrograde	4429 Mar 31 00:55	22° $\mathring{S}$ 15'58	
opposition	4423 Mar 21 17:31	1° $\mathring{S}$ 09'59	1°56'08	opposition	4429 Jun 07 11:25	18° $\mathring{S}$ 56'37	2°12'34
min. Earth dist.	4423 Mar 21 16:49	1° $\mathring{S}$ 10'07	8.20208 AU	min. Earth dist.	4429 Jun 07 12:48	18° $\mathring{S}$ 56'21	8.71524 AU



direct	4429 Aug 17 00:32	15°♄32'30			4435 Apr 14 23:00	0°♄	
evening set	4429 Nov 29 13:48	23°♄03'08		retrograde	4435 Jun 10 10:48	2°♄29'37	
					4435 Aug 08 18:13	30°♄	
conjunction	4429 Dec 16 13:47	25°♄06'04	1°39'27	opposition	4435 Aug 19 23:42	29°♄10'32	0°-39'-10
minimum elong	4429 Dec 16 13:49	25°♄06'05	1°39'27	min. Earth dist.	4435 Aug 19 23:27	29°♄10'34	8.97436 AU
max. Earth dist.	4429 Dec 16 11:56	25°♄05'31	10.75566 AU	direct	4435 Oct 29 11:56	25°♄51'20	
morning rise	4430 Jan 02 10:22	27°♄07'59			4436 Jan 11 15:07	0°♄	
	4430 Jan 27 21:32	0°♄		evening set	4436 Feb 07 07:16	2°♄55'41	
retrograde	4430 Apr 12 06:58	4°♄19'53					
opposition	4430 Jun 20 03:42	1°♄01'02	1°50'53	conjunction	4436 Feb 23 23:28	4°♄53'51	0°-44'-31
min. Earth dist.	4430 Jun 20 04:33	1°♄00'53	8.79497 AU	minimum elong	4436 Feb 23 23:27	4°♄53'51	0°44'32
	4430 Jul 03 19:08	30°♄		max. Earth dist.	4436 Feb 23 23:44	4°♄53'56	10.96758 AU
direct	4430 Aug 29 22:25	27°♄37'56		morning rise	4436 Mar 11 16:09	6°♄52'14	
	4430 Oct 23 23:33	0°♄		retrograde	4436 Jun 21 14:14	14°♄01'18	
evening set	4430 Dec 11 19:20	5°♄01'41		opposition	4436 Aug 31 06:34	10°♄41'37	-1°-9'-17
				min. Earth dist.	4436 Aug 31 05:54	10°♄41'44	8.95657 AU
conjunction	4430 Dec 28 17:14	7°♄03'06	1°20'01	direct	4436 Nov 09 10:52	7°♄22'46	
minimum elong	4430 Dec 28 17:16	7°♄03'07	1°20'02	evening set	4437 Feb 17 21:42	14°♄27'05	
max. Earth dist.	4430 Dec 28 16:09	7°♄02'46	10.83020 AU				
morning rise	4431 Jan 14 12:08	9°♄03'39		conjunction	4437 Mar 06 13:40	16°♄25'32	-1°-8'-6
retrograde	4431 Apr 24 09:35	16°♄11'41		minimum elong	4437 Mar 06 13:37	16°♄25'31	1°08'07
opposition	4431 Jul 02 16:30	12°♄53'09	1°24'49	max. Earth dist.	4437 Mar 06 13:37	16°♄25'31	10.94047 AU
min. Earth dist.	4431 Jul 02 16:45	12°♄53'06	8.86301 AU	morning rise	4437 Mar 23 07:01	18°♄24'26	
direct	4431 Sep 11 13:54	9°♄31'01		retrograde	4437 Jul 03 21:27	25°♄37'43	
evening set	4431 Dec 23 18:36	16°♄48'36		opposition	4437 Sep 12 15:05	22°♄17'16	-1°-36'-46
				min. Earth dist.	4437 Sep 12 14:49	22°♄17'19	8.92086 AU
conjunction	4432 Jan 09 14:48	18°♄48'47	0°57'27	direct	4437 Nov 21 10:36	18°♄58'34	
minimum elong	4432 Jan 09 14:50	18°♄48'48	0°57'27	evening set	4438 Mar 01 14:29	26°♄04'07	
max. Earth dist.	4432 Jan 09 14:26	18°♄48'40	10.89157 AU				
morning rise	4432 Jan 26 08:29	20°♄48'17		conjunction	4438 Mar 18 06:40	28°♄03'11	-1°-29'-3
retrograde	4432 May 05 11:04	27°♄53'44		minimum elong	4438 Mar 18 06:38	28°♄03'11	1°29'03
opposition	4432 Jul 14 02:30	24°♄35'21	0°55'35	max. Earth dist.	4438 Mar 18 06:19	28°♄03'05	10.89605 AU
min. Earth dist.	4432 Jul 14 02:49	24°♄35'17	8.91666 AU		4438 Apr 03 15:11	0°♄	
direct	4432 Sep 23 00:43	21°♄14'07		morning rise	4438 Apr 04 01:13	0°♄02'57	
evening set	4433 Jan 03 13:17	28°♄26'34		retrograde	4438 Jul 16 07:34	7°♄21'32	
	4433 Jan 16 17:27	0°♄		opposition	4438 Sep 25 01:47	4°♄00'12	-2°00'-33
				min. Earth dist.	4438 Sep 25 01:38	4°♄00'13	8.86864 AU
conjunction	4433 Jan 20 07:56	0°♄25'47	0°32'44	direct	4438 Dec 03 11:07	0°♄41'26	
minimum elong	4433 Jan 20 07:57	0°♄25'48	0°32'44	evening set	4439 Mar 13 11:06	7°♄49'29	
max. Earth dist.	4433 Jan 20 07:11	0°♄25'34	10.93736 AU				
morning rise	4433 Feb 06 00:53	2°♄24'32		conjunction	4439 Mar 30 04:17	9°♄49'32	-1°-46'-29
retrograde	4433 May 17 10:02	9°♄28'45		minimum elong	4439 Mar 30 04:15	9°♄49'31	1°46'30
opposition	4433 Jul 26 10:27	6°♄10'21	0°24'24	max. Earth dist.	4439 Mar 30 04:35	9°♄49'37	10.83600 AU
min. Earth dist.	4433 Jul 26 11:20	6°♄10'11	8.95392 AU	morning rise	4439 Apr 16 00:24	11°♄50'28	
direct	4433 Oct 05 06:23	2°♄49'55		retrograde	4439 Jul 28 22:53	19°♄15'15	
evening set	4434 Jan 15 04:41	9°♄58'25		opposition	4439 Oct 07 15:03	15°♄52'54	-2°-19'-33
				min. Earth dist.	4439 Oct 07 14:24	15°♄53'02	8.80187 AU
conjunction	4434 Jan 31 22:04	11°♄56'58	0°06'53	direct	4439 Dec 15 15:35	12°♄33'53	
minimum elong	4434 Jan 31 22:05	11°♄56'58	0°06'54	evening set	4440 Mar 24 12:42	19°♄45'35	
behind sun begin	4434 Jan 31 15:35	11°♄55'03					
behind sun end	4434 Feb 01 04:36	11°♄58'53		conjunction	4440 Apr 10 07:35	21°♄46'59	-1°-59'-34
max. Earth dist.	4434 Jan 31 20:46	11°♄56'36	10.96596 AU	minimum elong	4440 Apr 10 07:34	21°♄46'59	1°59'35
morning rise	4434 Feb 17 14:44	13°♄55'17		max. Earth dist.	4440 Apr 10 08:53	21°♄47'23	10.76261 AU
	4434 Feb 27 00:37	15°♄		morning rise	4440 Apr 27 05:45	23°♄49'26	
desc. node	4434 May 10 08:41	20°♄41'46			4440 Jun 29 22:45	0°♄	
retrograde	4434 May 29 08:42	20°♄59'45		retrograde	4440 Aug 09 21:33	1°♄21'03	
opposition	4434 Aug 07 17:18	17°♄41'05	0°-7'-34		4440 Sep 20 13:53	30°♄	
min. Earth dist.	4434 Aug 07 17:51	17°♄40'59	8.97344 AU	opposition	4440 Oct 19 07:53	27°♄57'38	-2°-32'-47
	4434 Sep 18 21:03	15°♄		min. Earth dist.	4440 Oct 19 06:28	27°♄57'54	8.72306 AU
direct	4434 Oct 17 10:21	14°♄21'21		direct	4440 Dec 26 21:45	24°♄38'10	
	4434 Nov 14 13:20	15°♄			4441 Mar 20 10:08	0°♄	
evening set	4435 Jan 26 18:03	21°♄27'06		evening set	4441 Apr 05 20:19	1°♄54'30	
conjunction	4435 Feb 12 10:41	23°♄25'19	0°-19'-14	conjunction	4441 Apr 22 17:29	3°♄57'35	-2°-7'-32
minimum elong	4435 Feb 12 10:41	23°♄25'19	0°19'15	minimum elong	4441 Apr 22 17:28	3°♄57'34	2°07'33
max. Earth dist.	4435 Feb 12 10:07	23°♄25'09	10.97620 AU	max. Earth dist.	4441 Apr 22 18:44	3°♄57'58	10.67878 AU
morning rise	4435 Mar 01 03:14	25°♄23'31		morning rise	4441 May 09 18:29	6°♄01'53	



retrograde	4441 Aug 23 01:26	13°♄40'39			4448 Jan 13 06:43	30°♄♄	
opposition	4441 Nov 01 04:44	10°♄16'10	-2°-39'-22	opposition	4448 Jan 19 23:58	29°♄27'11	0°-43'-17
min. Earth dist.	4441 Nov 01 03:25	10°♄16'25	8.63532 AU	min. Earth dist.	4448 Jan 19 23:20	29°♄27'19	8.14892 AU
direct	4442 Jan 08 06:42	6°♄55'59		direct	4448 Mar 26 18:14	26°♄00'20	
evening set	4442 Apr 18 11:02	14°♄17'51			4448 Jun 03 19:31	0°♄	
	4442 Apr 24 05:41	15°♄		evening set	4448 Jul 08 04:15	4°♄01'12	
conjunction	4442 May 05 11:16	16°♄22'58	-2°-9'-44	conjunction	4448 Jul 26 05:11	6°♄19'38	0°-19'-38
minimum elong	4442 May 05 11:16	16°♄22'58	2°09'45	minimum elong	4448 Jul 26 05:12	6°♄19'38	0°19'39
max. Earth dist.	4442 May 05 11:47	16°♄23'07	10.58780 AU	max. Earth dist.	4448 Jul 26 05:15	6°♄19'39	10.13122 AU
morning rise	4442 May 22 15:52	18°♄29'24		morning rise	4448 Aug 13 07:48	8°♄38'36	
retrograde	4442 Sep 05 09:38	26°♄15'19			4448 Oct 12 05:04	15°♄	
opposition	4442 Nov 14 05:40	22°♄49'46	-2°-38'-33	retrograde	4448 Nov 26 16:35	16°♄48'26	
min. Earth dist.	4442 Nov 14 05:05	22°♄49'53	8.54194 AU		4449 Jan 11 16:58	15°♄♄	
direct	4443 Jan 20 23:02	19°♄28'40		opposition	4449 Feb 01 21:57	13°♄20'03	0°-4'-55
evening set	4443 May 01 09:24	26°♄56'49		min. Earth dist.	4449 Feb 01 21:42	13°♄20'06	8.11920 AU
conjunction	4443 May 18 13:33	29°♄04'15	-2°-5'-43	asc. node	4449 Mar 21 19:52	10°♄12'12	
minimum elong	4443 May 18 13:35	29°♄04'16	2°05'45	direct	4449 Apr 09 19:12	9°♄52'12	
max. Earth dist.	4443 May 18 13:29	29°♄04'14	10.49303 AU		4449 Jun 28 09:53	15°♄	
	4443 May 26 00:49	0°♄		evening set	4449 Jul 22 22:28	17°♄57'22	
morning rise	4443 Jun 04 22:16	1°♄13'05		conjunction	4449 Aug 10 00:59	20°♄16'30	0°11'42
retrograde	4443 Sep 19 00:30	9°♄05'52		minimum elong	4449 Aug 10 00:58	20°♄16'30	0°11'42
opposition	4443 Nov 27 11:00	5°♄39'22	-2°-29'-54	behind sun begin	4449 Aug 09 19:53	20°♄14'52	
min. Earth dist.	4443 Nov 27 11:01	5°♄39'22	8.44650 AU	behind sun end	4449 Aug 10 06:03	20°♄18'07	
direct	4444 Feb 02 20:08	2°♄17'13		max. Earth dist.	4449 Aug 10 00:54	20°♄16'29	10.11302 AU
evening set	4444 May 13 15:58	9°♄52'10		morning rise	4449 Aug 28 04:04	22°♄35'49	
conjunction	4444 May 31 00:40	12°♄02'09	-1°-55'-19		4449 Nov 12 12:35	0°♄	
minimum elong	4444 May 31 00:42	12°♄02'09	1°55'21	retrograde	4449 Dec 10 21:08	0°♄43'55	
max. Earth dist.	4444 May 31 00:58	12°♄02'14	10.39852 AU		4450 Jan 08 08:01	30°♄♄	
morning rise	4444 Jun 17 13:42	14°♄13'30		opposition	4450 Feb 15 20:35	27°♄15'57	0°33'53
retrograde	4444 Oct 01 21:10	22°♄12'32		min. Earth dist.	4450 Feb 15 20:22	27°♄16'00	8.11277 AU
opposition	4444 Dec 09 20:42	18°♄45'13	-2°-13'-21	direct	4450 Apr 24 00:44	23°♄47'20	
min. Earth dist.	4444 Dec 09 20:23	18°♄45'16	8.35393 AU		4450 Jul 22 04:02	0°♄	
direct	4445 Feb 14 22:48	15°♄21'55		evening set	4450 Aug 06 18:59	1°♄55'14	
evening set	4445 May 27 07:13	23°♄03'56		conjunction	4450 Aug 24 21:32	4°♄14'17	0°42'19
conjunction	4445 Jun 13 20:45	25°♄16'30	-1°-38'-42	minimum elong	4450 Aug 24 21:30	4°♄14'17	0°42'19
minimum elong	4445 Jun 13 20:48	25°♄16'31	1°38'44	max. Earth dist.	4450 Aug 24 21:31	4°♄14'17	10.11821 AU
max. Earth dist.	4445 Jun 13 21:32	25°♄16'45	10.30989 AU	morning rise	4450 Sep 11 23:23	6°♄33'07	
morning rise	4445 Jul 01 14:09	27°♄30'20		retrograde	4450 Dec 24 22:37	14°♄37'49	
	4445 Jul 22 11:10	0°♄		opposition	4451 Mar 01 18:42	11°♄10'30	1°10'38
retrograde	4445 Oct 15 22:04	5°♄34'31		min. Earth dist.	4451 Mar 01 18:11	11°♄10'36	8.12980 AU
opposition	4445 Dec 23 10:28	2°♄06'33	-1°-49'-19	direct	4451 May 08 06:47	7°♄41'25	
min. Earth dist.	4445 Dec 23 09:40	2°♄06'42	8.27011 AU	evening set	4451 Aug 21 15:03	15°♄50'17	
	4446 Jan 20 17:13	30°♄♄		conjunction	4451 Sep 08 16:09	18°♄08'28	1°10'22
direct	4446 Feb 28 08:10	28°♄42'03		minimum elong	4451 Sep 08 16:06	18°♄08'27	1°10'22
	4446 Apr 07 07:39	0°♄		max. Earth dist.	4451 Sep 08 16:33	18°♄08'36	10.14635 AU
evening set	4446 Jun 10 06:58	6°♄30'59		morning rise	4451 Sep 26 15:20	20°♄26'04	
conjunction	4446 Jun 28 01:07	8°♄45'58	-1°-16'-26	retrograde	4452 Jan 07 21:27	28°♄25'57	
minimum elong	4446 Jun 28 01:10	8°♄45'59	1°16'28	opposition	4452 Mar 14 15:25	24°♄59'28	1°43'01
max. Earth dist.	4446 Jun 28 02:04	8°♄46'16	10.23278 AU	min. Earth dist.	4452 Mar 14 14:27	24°♄59'40	8.16910 AU
morning rise	4446 Jul 15 22:34	11°♄02'02		direct	4452 May 21 12:22	21°♄30'14	
retrograde	4446 Oct 30 02:43	19°♄09'52		evening set	4452 Sep 04 07:54	29°♄38'08	
opposition	4447 Jan 06 03:51	15°♄41'29	-1°-18'-46		4452 Sep 07 05:31	0°♄	
min. Earth dist.	4447 Jan 06 02:52	15°♄41'41	8.20031 AU	conjunction	4452 Sep 22 06:23	1°♄54'50	1°34'09
direct	4447 Mar 13 22:31	12°♄15'46		minimum elong	4452 Sep 22 06:20	1°♄54'49	1°34'09
evening set	4447 Jun 24 14:27	20°♄11'06		max. Earth dist.	4452 Sep 22 07:11	1°♄55'06	10.19558 AU
conjunction	4447 Jul 12 12:30	22°♄28'07	0°-49'-35	morning rise	4452 Oct 10 01:52	4°♄10'38	
minimum elong	4447 Jul 12 12:32	22°♄28'07	0°49'36	retrograde	4453 Jan 20 15:35	12°♄04'34	
max. Earth dist.	4447 Jul 12 13:04	22°♄28'17	10.17195 AU	opposition	4453 Mar 28 09:39	8°♄39'05	2°09'08
morning rise	4447 Jul 30 13:09	24°♄45'57		min. Earth dist.	4453 Mar 28 08:52	8°♄39'14	8.22808 AU
	4447 Sep 15 07:41	0°♄		direct	4453 Jun 04 16:34	5°♄09'59	
retrograde	4447 Nov 13 09:35	2°♄55'42		evening set	4453 Sep 18 19:38	13°♄15'10	



conjunction	4453 Oct 06 14:34	15°♄29'53	1°52'22	conjunction	4459 Dec 23 09:06	1°♄39'21	1°29'37
minimum elong	4453 Oct 06 14:31	15°♄29'52	1°52'23	minimum elong	4459 Dec 23 09:08	1°♄39'22	1°29'37
max. Earth dist.	4453 Oct 06 15:04	15°♄30'03	10.26281 AU	max. Earth dist.	4459 Dec 23 08:46	1°♄39'15	10.80134 AU
morning rise	4453 Oct 24 05:47	17°♄43'30		morning rise	4460 Jan 09 04:43	3°♄40'30	
retrograde	4454 Feb 03 03:05	25°♄30'38		retrograde	4460 Apr 18 01:54	10°♄50'12	
opposition	4454 Apr 11 00:32	22°♄06'18	2°27'41	opposition	4460 Jun 26 03:39	7°♄31'54	1°37'32
min. Earth dist.	4454 Apr 11 00:21	22°♄06'21	8.30317 AU	min. Earth dist.	4460 Jun 26 04:21	7°♄31'46	8.83890 AU
direct	4454 Jun 18 19:01	18°♄37'39		direct	4460 Sep 04 22:16	4°♄09'41	
evening set	4454 Oct 03 00:05	26°♄38'31		evening set	4460 Dec 17 12:44	11°♄30'11	
conjunction	4454 Oct 20 15:02	28°♄50'58	2°04'13	conjunction	4461 Jan 03 09:36	13°♄30'52	1°08'23
minimum elong	4454 Oct 20 15:00	28°♄50'57	2°04'13	minimum elong	4461 Jan 03 09:38	13°♄30'53	1°08'24
max. Earth dist.	4454 Oct 20 14:53	28°♄50'55	10.34419 AU	max. Earth dist.	4461 Jan 03 08:34	13°♄30'34	10.87221 AU
	4454 Oct 29 18:18	0°♄		morning rise	4461 Jan 20 03:56	15°♄30'48	
morning rise	4454 Nov 07 01:53	1°♄02'11		retrograde	4461 Apr 30 03:58	22°♄37'18	
retrograde	4455 Feb 16 08:06	8°♄42'09		opposition	4461 Jul 08 15:09	19°♄19'22	1°09'38
opposition	4455 Apr 24 11:41	5°♄19'03	2°37'58	min. Earth dist.	4461 Jul 08 15:37	19°♄19'17	8.90234 AU
min. Earth dist.	4455 Apr 24 11:59	5°♄18'59	8.39013 AU	direct	4461 Sep 17 12:58	15°♄58'13	
direct	4455 Jul 02 17:27	1°♄51'08		evening set	4461 Dec 29 09:44	23°♄13'02	
evening set	4455 Oct 16 19:48	9°♄46'17		conjunction	4462 Jan 15 05:02	25°♄12'38	0°44'33
conjunction	4455 Nov 03 06:45	11°♄56'23	2°09'21	minimum elong	4462 Jan 15 05:03	25°♄12'39	0°44'34
minimum elong	4455 Nov 03 06:45	11°♄56'23	2°09'21	max. Earth dist.	4462 Jan 15 04:24	25°♄12'27	10.92794 AU
max. Earth dist.	4455 Nov 03 05:59	11°♄56'09	10.43526 AU	morning rise	4462 Jan 31 22:20	27°♄11'39	
morning rise	4455 Nov 20 13:35	14°♄05'12			4462 Feb 26 06:33	0°♄	
	4455 Nov 28 02:36	15°♄		retrograde	4462 May 12 04:17	4°♄16'16	
retrograde	4456 Feb 29 07:15	21°♄38'00		opposition	4462 Jul 21 00:17	0°♄58'27	0°39'14
opposition	4456 May 06 18:29	18°♄16'05	2°39'56	min. Earth dist.	4462 Jul 21 00:11	0°♄58'28	8.94932 AU
min. Earth dist.	4456 May 06 18:43	18°♄16'02	8.48423 AU		4462 Aug 03 07:25	30°♄♂	
	4456 Jun 30 21:00	15°♄♂		direct	4462 Sep 29 21:11	27°♄38'14	
direct	4456 Jul 15 10:56	14°♄49'09			4462 Nov 24 00:00	0°♄	
	4456 Jul 30 00:05	15°♄		evening set	4463 Jan 10 02:47	4°♄48'26	
evening set	4456 Oct 29 06:30	22°♄37'39		conjunction	4463 Jan 26 20:51	6°♄47'13	0°19'07
conjunction	4456 Nov 15 13:50	24°♄45'28	2°07'53	minimum elong	4463 Jan 26 20:52	6°♄47'13	0°19'08
minimum elong	4456 Nov 15 13:51	24°♄45'28	2°07'53	max. Earth dist.	4463 Jan 26 20:43	6°♄47'11	10.96587 AU
max. Earth dist.	4456 Nov 15 13:00	24°♄45'13	10.53118 AU	morning rise	4463 Feb 12 13:28	8°♄45'38	
morning rise	4456 Dec 02 17:00	26°♄52'00			4463 Apr 22 08:58	15°♄	
	4456 Dec 30 01:14	0°♄♂		retrograde	4463 May 24 04:28	15°♄49'48	
retrograde	4457 Mar 13 00:26	4°♄♂17'53			4463 Jun 25 14:42	15°♄♂	
opposition	4457 May 19 20:43	0°♄♂57'07	2°33'59	opposition	4463 Aug 02 07:44	12°♄31'49	0°07'29
min. Earth dist.	4457 May 19 20:30	0°♄♂57'09	8.58056 AU	min. Earth dist.	4463 Aug 02 07:58	12°♄31'47	8.97748 AU
	4457 Jun 01 06:46	30°♄♂		direct	4463 Oct 12 02:09	9°♄12'20	
direct	4457 Jul 28 23:04	27°♄31'19		desc. node	4463 Oct 29 11:44	9°♄27'11	
	4457 Sep 22 20:03	0°♄♂			4464 Jan 10 03:09	15°♄	
evening set	4457 Nov 11 08:07	5°♄♂12'39		evening set	4464 Jan 21 17:23	16°♄19'14	
conjunction	4457 Nov 28 12:17	7°♄♂18'20	2°00'17	conjunction	4464 Feb 07 10:22	18°♄17'32	0°-7'-2
minimum elong	4457 Nov 28 12:18	7°♄♂18'21	2°00'17	minimum elong	4464 Feb 07 10:22	18°♄17'32	0°07'03
max. Earth dist.	4457 Nov 28 12:06	7°♄♂18'17	10.62707 AU	behind sun begin	4464 Feb 07 03:54	18°♄15'38	
morning rise	4457 Dec 15 12:16	9°♄♂22'48		behind sun end	4464 Feb 07 16:50	18°♄19'26	
retrograde	4458 Mar 25 13:55	16°♄♂42'23		max. Earth dist.	4464 Feb 07 09:17	18°♄17'13	10.98390 AU
opposition	4458 Jun 01 18:56	13°♄♂22'37	2°20'53	morning rise	4464 Feb 24 02:49	20°♄15'41	
min. Earth dist.	4458 Jun 01 18:34	13°♄♂22'41	8.67449 AU	retrograde	4464 Jun 04 05:56	27°♄20'50	
direct	4458 Aug 11 05:02	9°♄♂58'03		opposition	4464 Aug 13 14:34	24°♄02'31	0°-24'-25
evening set	4458 Nov 24 00:59	17°♄♂32'03		min. Earth dist.	4464 Aug 13 15:42	24°♄02'18	8.98520 AU
				direct	4464 Oct 23 03:45	20°♄43'33	
conjunction	4458 Dec 11 02:20	19°♄♂35'49	1°47'14	evening set	4465 Feb 01 06:59	27°♄48'32	
minimum elong	4458 Dec 11 02:22	19°♄♂35'50	1°47'14	conjunction	4465 Feb 17 23:10	29°♄46'40	0°-32'-46
max. Earth dist.	4458 Dec 11 02:36	19°♄♂35'54	10.71845 AU	minimum elong	4465 Feb 17 23:09	29°♄46'40	0°32'48
morning rise	4458 Dec 27 23:46	21°♄♂38'27		max. Earth dist.	4465 Feb 17 21:09	29°♄46'04	10.98123 AU
retrograde	4459 Apr 06 22:38	28°♄♂52'36			4465 Feb 19 20:01	0°♄	
opposition	4459 Jun 14 13:11	25°♄♂33'40	2°01'41	morning rise	4465 Mar 06 15:47	1°♄44'54	
min. Earth dist.	4459 Jun 14 13:18	25°♄♂33'39	8.76184 AU	retrograde	4465 Jun 16 06:27	8°♄52'31	
direct	4459 Aug 24 03:46	22°♄♂10'20		opposition	4465 Aug 25 21:36	5°♄33'35	0°-55'-22
evening set	4459 Dec 06 10:12	29°♄♂37'15		min. Earth dist.	4465 Aug 25 23:02	5°♄33'19	8.97252 AU
	4459 Dec 09 14:49	0°♄					



direct	4465 Nov 04 04:39	2° <del>✕</del> 14'56			4472 Feb 19 23:47	15° <del>8</del>	
evening set	4466 Feb 12 21:01	9° <del>✕</del> 19'22		evening set	4472 Apr 24 18:15	21° <del>8</del> 19'35	
conjunction	4466 Mar 01 12:58	11° <del>✕</del> 17'39	0°-57'-16	conjunction	4472 May 11 20:43	23° <del>8</del> 26'10	-2°-8'-23
minimum elong	4466 Mar 01 12:56	11° <del>✕</del> 17'39	0°57'17	minimum elong	4472 May 11 20:44	23° <del>8</del> 26'11	2°08'25
max. Earth dist.	4466 Mar 01 11:21	11° <del>✕</del> 17'10	10.95858 AU	max. Earth dist.	4472 May 11 21:36	23° <del>8</del> 26'27	10.51477 AU
morning rise	4466 Mar 18 06:01	13° <del>✕</del> 16'17		morning rise	4472 May 29 03:22	25° <del>8</del> 34'06	
retrograde	4466 Jun 28 12:29	20° <del>✕</del> 27'41			4472 Jul 08 04:14	0° <del>II</del>	
opposition	4466 Sep 07 05:38	17° <del>✕</del> 07'53	-1°-24'-14	retrograde	4472 Sep 12 02:24	3° <del>II</del> 24'35	
min. Earth dist.	4466 Sep 07 06:20	17° <del>✕</del> 07'45	8.94057 AU	opposition	4472 Nov 20 17:09	29° <del>8</del> 57'46	-2°-35'00
direct	4466 Nov 16 06:17	13° <del>✕</del> 49'18			4472 Nov 20 05:50	30° <del>R</del> <del>8</del>	
evening set	4467 Feb 24 12:47	20° <del>✕</del> 54'25		min. Earth dist.	4472 Nov 20 16:02	29° <del>8</del> 57'59	8.46785 AU
				direct	4473 Jan 27 06:07	26° <del>8</del> 35'26	
conjunction	4467 Mar 13 04:58	22° <del>✕</del> 53'13	-1°-19'-35		4473 Apr 01 03:04	0° <del>II</del>	
minimum elong	4467 Mar 13 04:55	22° <del>✕</del> 53'12	1°19'36	evening set	4473 May 07 21:11	4° <del>II</del> 07'57	
max. Earth dist.	4467 Mar 13 04:14	22° <del>✕</del> 53'00	10.91727 AU				
morning rise	4467 Mar 29 22:47	24° <del>✕</del> 52'35		conjunction	4473 May 25 03:47	6° <del>II</del> 17'00	-2°00'-57
	4467 May 19 13:17	0° <del>Y</del>		minimum elong	4473 May 25 03:50	6° <del>II</del> 17'00	2°00'59
retrograde	4467 Jul 10 22:35	2° <del>Y</del> 08'52		max. Earth dist.	4473 May 25 04:22	6° <del>II</del> 17'11	10.41920 AU
	4467 Sep 03 05:47	30° <del>R</del> <del>✕</del>		morning rise	4473 Jun 11 14:49	8° <del>II</del> 27'26	
opposition	4467 Sep 19 15:25	28° <del>✕</del> 48'00	-1°-49'-55	retrograde	4473 Sep 25 21:08	16° <del>II</del> 24'32	
min. Earth dist.	4467 Sep 19 15:37	28° <del>✕</del> 47'58	8.89082 AU	opposition	4473 Dec 04 01:21	12° <del>II</del> 56'49	-2°-22'-5
direct	4467 Nov 28 06:03	25° <del>✕</del> 29'17		min. Earth dist.	4473 Dec 04 00:26	12° <del>II</del> 57'00	8.37404 AU
	4468 Feb 13 02:02	0° <del>Y</del>		direct	4474 Feb 09 05:58	9° <del>II</del> 33'23	
evening set	4468 Mar 07 07:50	2° <del>Y</del> 36'22		evening set	4474 May 21 08:50	17° <del>II</del> 12'53	
conjunction	4468 Mar 24 00:34	4° <del>Y</del> 36'00	-1°-38'-48	conjunction	4474 Jun 07 20:04	19° <del>II</del> 24'30	-1°-47'-8
minimum elong	4468 Mar 24 00:32	4° <del>Y</del> 35'59	1°38'49	minimum elong	4474 Jun 07 20:06	19° <del>II</del> 24'30	1°47'10
max. Earth dist.	4468 Mar 23 23:40	4° <del>Y</del> 35'44	10.85911 AU	max. Earth dist.	4474 Jun 07 20:23	19° <del>II</del> 24'36	10.32887 AU
morning rise	4468 Apr 09 19:46	6° <del>Y</del> 36'25		morning rise	4474 Jun 25 11:40	21° <del>II</del> 37'27	
retrograde	4468 Jul 22 11:27	13° <del>Y</del> 58'34		retrograde	4474 Oct 09 19:51	29° <del>II</del> 40'10	
opposition	4468 Oct 01 03:41	10° <del>Y</del> 36'32	-2°-11'-20	opposition	4474 Dec 17 13:39	26° <del>II</del> 11'49	-2°-1'-22
min. Earth dist.	4468 Oct 01 04:03	10° <del>Y</del> 36'28	8.82539 AU	min. Earth dist.	4474 Dec 17 13:05	26° <del>II</del> 11'55	8.28785 AU
direct	4468 Dec 09 08:19	7° <del>Y</del> 17'24		direct	4475 Feb 22 13:06	22° <del>II</del> 47'14	
evening set	4469 Mar 19 07:14	14° <del>Y</del> 27'42			4475 May 30 16:01	0° <del>☾</del>	
				evening set	4475 Jun 04 05:02	0° <del>☾</del> 33'45	
conjunction	4469 Apr 05 01:07	16° <del>Y</del> 28'32	-1°-54'-2	conjunction	4475 Jun 21 21:02	2° <del>☾</del> 47'51	-1°-27'-21
minimum elong	4469 Apr 05 01:05	16° <del>Y</del> 28'31	1°54'03	minimum elong	4475 Jun 21 21:05	2° <del>☾</del> 47'52	1°27'23
max. Earth dist.	4469 Apr 04 23:49	16° <del>Y</del> 28'08	10.78663 AU	max. Earth dist.	4475 Jun 21 21:40	2° <del>☾</del> 48'03	10.24863 AU
morning rise	4469 Apr 21 22:20	18° <del>Y</del> 30'21		morning rise	4475 Jul 09 16:55	5° <del>☾</del> 03'10	
retrograde	4469 Aug 04 06:12	25° <del>Y</del> 59'09		retrograde	4475 Oct 23 22:49	13° <del>☾</del> 10'13	
opposition	4469 Oct 13 19:15	22° <del>Y</del> 35'52	-2°-27'-26	opposition	4475 Dec 31 05:55	9° <del>☾</del> 41'28	-1°-33'-35
min. Earth dist.	4469 Oct 13 19:54	22° <del>Y</del> 35'45	8.74704 AU	min. Earth dist.	4475 Dec 31 05:09	9° <del>☾</del> 41'38	8.21413 AU
direct	4469 Dec 21 13:46	19° <del>Y</del> 16'09		direct	4476 Mar 07 01:48	6° <del>☾</del> 15'50	
evening set	4470 Mar 31 11:56	26° <del>Y</del> 30'43		evening set	4476 Jun 17 09:12	14° <del>☾</del> 08'58	
conjunction	4470 Apr 17 07:55	28° <del>Y</del> 33'08	-2°-4'-30	conjunction	4476 Jul 05 05:36	16° <del>☾</del> 25'17	-1°-2'-25
minimum elong	4470 Apr 17 07:54	28° <del>Y</del> 33'07	2°04'31	minimum elong	4476 Jul 05 05:39	16° <del>☾</del> 25'18	1°02'26
max. Earth dist.	4470 Apr 17 07:18	28° <del>Y</del> 32'57	10.70276 AU	max. Earth dist.	4476 Jul 05 07:03	16° <del>☾</del> 25'45	10.18313 AU
	4470 Apr 29 05:30	0° <del>8</del>		morning rise	4476 Jul 23 05:03	18° <del>☾</del> 42'35	
morning rise	4470 May 04 07:42	0° <del>8</del> 36'42		retrograde	4476 Nov 06 05:23	26° <del>☾</del> 52'24	
retrograde	4470 Aug 17 06:15	8° <del>8</del> 12'40		opposition	4477 Jan 13 01:24	23° <del>☾</del> 23'33	-1°00'-4
opposition	4470 Oct 26 14:25	4° <del>8</del> 48'07	-2°-37'-15	min. Earth dist.	4477 Jan 12 23:57	23° <del>☾</del> 23'51	8.15736 AU
min. Earth dist.	4470 Oct 26 14:36	4° <del>8</del> 48'05	8.65882 AU	direct	4477 Mar 20 19:53	19° <del>☾</del> 56'56	
direct	4471 Jan 02 22:46	1° <del>8</del> 27'39		evening set	4477 Jul 01 20:43	27° <del>☾</del> 56'01	
evening set	4471 Apr 12 23:21	8° <del>8</del> 47'30			4477 Jul 18 01:00	0° <del>Ω</del>	
conjunction	4471 Apr 29 22:15	10° <del>8</del> 51'51	-2°-9'-28	conjunction	4477 Jul 19 20:40	0° <del>Ω</del> 14'03	0°-33'-37
minimum elong	4471 Apr 29 22:15	10° <del>8</del> 51'51	2°09'29	minimum elong	4477 Jul 19 20:42	0° <del>Ω</del> 14'04	0°33'39
max. Earth dist.	4471 Apr 29 22:37	10° <del>8</del> 51'58	10.61080 AU	max. Earth dist.	4477 Jul 19 22:55	0° <del>Ω</del> 14'47	10.13647 AU
morning rise	4471 May 17 01:07	12° <del>8</del> 57'27		morning rise	4477 Aug 06 22:36	2° <del>Ω</del> 32'47	
	4471 Jun 03 12:30	15° <del>8</del>		retrograde	4477 Nov 20 13:11	10° <del>Ω</del> 43'31	
retrograde	4471 Aug 30 12:32	20° <del>8</del> 40'46		opposition	4478 Jan 26 23:05	7° <del>Ω</del> 14'53	0°-22'-39
opposition	4471 Nov 08 13:30	17° <del>8</del> 15'01	-2°-39'-59	min. Earth dist.	4478 Jan 26 21:05	7° <del>Ω</del> 15'17	8.12118 AU
min. Earth dist.	4471 Nov 08 12:55	17° <del>8</del> 15'08	8.56435 AU	direct	4478 Apr 03 18:52	3° <del>Ω</del> 47'26	
	4471 Dec 10 07:02	15° <del>R</del> <del>8</del>		evening set	4478 Jul 16 13:56	11° <del>Ω</del> 51'25	
direct	4472 Jan 15 12:43	13° <del>8</del> 53'41					



conjunction	4478 Aug 03 16:06	14°♏10'30	0°-2'-42	direct	4484 Jun 25 21:59	26°♑16'17	
minimum elong	4478 Aug 03 16:06	14°♏10'30	0°02'43		4484 Sep 02 13:47	0°♐	
behind sun begin	4478 Aug 03 08:46	14°♏08'10		evening set	4484 Oct 10 02:34	4°♐14'20	
behind sun end	4478 Aug 03 23:26	14°♏12'50					
max. Earth dist.	4478 Aug 03 18:28	14°♏11'13	10.11163 AU	conjunction	4484 Oct 27 15:29	6°♐25'31	2°07'43
	4478 Aug 10 01:34	15°♏		minimum elong	4484 Oct 27 15:28	6°♐25'31	2°07'44
morning rise	4478 Aug 21 19:05	16°♏29'54		max. Earth dist.	4484 Oct 27 14:57	6°♐25'21	10.39891 AU
asc. node	4478 Sep 04 15:53	18°♏12'39		morning rise	4484 Nov 14 00:03	8°♐35'25	
retrograde	4478 Dec 04 20:30	24°♏39'42			4485 Jan 17 08:20	15°♐	
opposition	4479 Feb 09 22:13	21°♏11'34	0°16'19	retrograde	4485 Feb 23 01:18	16°♐11'46	
min. Earth dist.	4479 Feb 09 20:16	21°♏11'58	8.10797 AU		4485 Apr 01 08:55	15°♐♐	
direct	4479 Apr 17 21:53	17°♏43'29		opposition	4485 May 01 06:52	12°♐49'46	2°39'50
evening set	4479 Jul 31 10:28	25°♏50'54		min. Earth dist.	4485 May 01 07:16	12°♐49'41	8.44489 AU
				direct	4485 Jul 09 17:04	9°♐22'49	
conjunction	4479 Aug 18 13:14	28°♏10'13	0°28'35		4485 Oct 04 16:19	15°♐	
minimum elong	4479 Aug 18 13:13	28°♏10'13	0°28'36	evening set	4485 Oct 23 18:10	17°♐14'47	
max. Earth dist.	4479 Aug 18 15:19	28°♏10'53	10.11023 AU				
	4479 Sep 01 18:49	0°♐		conjunction	4485 Nov 10 03:15	19°♐23'42	2°09'08
morning rise	4479 Sep 05 15:43	0°♐29'28		minimum elong	4485 Nov 10 03:15	19°♐23'42	2°09'09
retrograde	4479 Dec 19 01:34	8°♐36'33		max. Earth dist.	4485 Nov 10 02:19	19°♐23'25	10.48911 AU
opposition	4480 Feb 23 21:31	5°♐09'10	0°54'21	morning rise	4485 Nov 27 07:52	21°♐31'18	
min. Earth dist.	4480 Feb 23 19:58	5°♐09'29	8.11861 AU	retrograde	4486 Mar 07 21:42	29°♐00'42	
direct	4480 May 01 03:04	1°♐40'39		opposition	4486 May 14 11:55	25°♐39'45	2°37'19
evening set	4480 Aug 14 07:52	9°♐49'45		min. Earth dist.	4486 May 14 13:12	25°♐39'30	8.53636 AU
				direct	4486 Jul 23 08:12	22°♐13'42	
conjunction	4480 Sep 01 09:43	12°♐08'30	0°58'04	evening set	4486 Nov 06 00:36	29°♐58'50	
minimum elong	4480 Sep 01 09:41	12°♐08'29	0°58'04		4486 Nov 06 04:27	0°♑	
max. Earth dist.	4480 Sep 01 11:11	12°♐08'58	10.13239 AU				
morning rise	4480 Sep 19 10:15	14°♐26'49		conjunction	4486 Nov 23 06:08	2°♑05'34	2°04'10
retrograde	4481 Jan 01 03:06	22°♐29'30		minimum elong	4486 Nov 23 06:09	2°♑05'34	2°04'10
opposition	4481 Mar 08 19:41	19°♐03'03	1°29'00	max. Earth dist.	4486 Nov 23 04:18	2°♑05'00	10.58097 AU
min. Earth dist.	4481 Mar 08 18:44	19°♐03'14	8.15229 AU	morning rise	4486 Dec 10 07:30	4°♑11'03	
direct	4481 May 15 10:12	15°♐34'19		retrograde	4487 Mar 20 12:14	11°♑33'56	
evening set	4481 Aug 29 03:19	23°♐43'13		opposition	4487 May 27 12:41	8°♑13'53	2°27'16
				min. Earth dist.	4487 May 27 14:11	8°♑13'36	8.62736 AU
conjunction	4481 Sep 16 02:57	26°♐00'40	1°23'59	direct	4487 Aug 05 18:32	4°♑48'48	
minimum elong	4481 Sep 16 02:54	26°♐00'39	1°23'59	evening set	4487 Nov 18 21:53	12°♑26'42	
max. Earth dist.	4481 Sep 16 03:33	26°♐00'52	10.17634 AU				
morning rise	4481 Oct 04 00:20	28°♐17'23		conjunction	4487 Dec 06 00:25	14°♑31'26	1°53'24
	4481 Oct 17 22:45	0°♑		minimum elong	4487 Dec 06 00:27	14°♑31'27	1°53'24
retrograde	4482 Jan 14 22:49	6°♑14'20		max. Earth dist.	4487 Dec 05 22:18	14°♑30'47	10.67039 AU
opposition	4482 Mar 22 15:40	2°♑48'55	1°58'08	morning rise	4487 Dec 22 23:10	16°♑35'01	
min. Earth dist.	4482 Mar 22 15:03	2°♑49'02	8.20623 AU	retrograde	4488 Mar 31 22:41	23°♑52'06	
	4482 May 02 06:03	30°♐♐		opposition	4488 Jun 08 09:09	20°♑32'44	2°10'37
direct	4482 May 29 17:20	29°♐20'14		min. Earth dist.	4488 Jun 08 10:15	20°♑32'32	8.71370 AU
	4482 Jun 26 02:34	0°♑		direct	4488 Aug 17 22:05	17°♑08'40	
evening set	4482 Sep 12 18:10	7°♑27'02		evening set	4488 Nov 30 10:58	24°♑39'22	
conjunction	4482 Sep 30 14:37	9°♑42'38	1°44'50	conjunction	4488 Dec 17 11:02	26°♑42'22	1°37'40
minimum elong	4482 Sep 30 14:34	9°♑42'37	1°44'51	minimum elong	4488 Dec 17 11:05	26°♑42'22	1°37'39
max. Earth dist.	4482 Sep 30 14:35	9°♑42'38	10.23850 AU	max. Earth dist.	4488 Dec 17 09:26	26°♑41'52	10.75322 AU
morning rise	4482 Oct 18 07:55	11°♑57'16		morning rise	4489 Jan 03 07:36	28°♑44'19	
retrograde	4483 Jan 28 12:25	19°♑47'38			4489 Jan 14 02:59	0°♒	
opposition	4483 Apr 05 08:30	16°♑23'19	2°20'11	retrograde	4489 Apr 13 04:45	5°♒56'29	
min. Earth dist.	4483 Apr 05 08:00	16°♑23'25	8.27602 AU	opposition	4489 Jun 21 01:37	2°♒37'38	1°48'28
direct	4483 Jun 12 22:16	12°♑54'58		min. Earth dist.	4489 Jun 21 02:09	2°♒37'32	8.79154 AU
evening set	4483 Sep 27 02:23	20°♑58'03			4489 Jul 30 22:10	30°♐♑	
				direct	4489 Aug 30 20:02	29°♑14'34	
conjunction	4483 Oct 14 19:08	23°♑11'30	1°59'35		4489 Sep 30 08:27	0°♒	
minimum elong	4483 Oct 14 19:05	23°♑11'29	1°59'36	evening set	4489 Dec 12 16:45	6°♒38'29	
max. Earth dist.	4483 Oct 14 18:47	23°♑11'23	10.31415 AU				
morning rise	4483 Nov 01 08:01	25°♑23'47		conjunction	4489 Dec 29 14:45	8°♒39'59	1°17'52
	4483 Dec 12 09:09	0°♐		minimum elong	4489 Dec 29 14:47	8°♒40'00	1°17'53
retrograde	4484 Feb 10 21:20	3°♐07'11		max. Earth dist.	4489 Dec 29 14:02	8°♒39'46	10.82590 AU
	4484 Apr 14 13:29	30°♐♐		morning rise	4490 Jan 15 09:36	10°♒40'36	
opposition	4484 Apr 17 21:38	29°♑44'02	2°34'11	retrograde	4490 Apr 25 08:54	17°♒49'01	
min. Earth dist.	4484 Apr 17 21:27	29°♑44'04	8.35690 AU	opposition	4490 Jul 03 14:57	14°♒30'29	1°22'01



min. Earth dist.	4490 Jul 03 15:36	14°☾30'21	8.85778 AU	opposition	4496 Sep 13 16:27	24°☾01'46	-1°-39'-23
direct	4490 Sep 12 11:55	11°☾08'22		min. Earth dist.	4496 Sep 13 16:24	24°☾01'47	8.91036 AU
evening set	4490 Dec 24 16:21	18°☾26'12		direct	4496 Nov 22 10:42	20°☾42'59	
				evening set	4497 Mar 02 15:06	27°☾49'07	
conjunction	4491 Jan 10 12:30	20°☾26'29	0°55'02				
minimum elong	4491 Jan 10 12:32	20°☾26'30	0°55'02	conjunction	4497 Mar 19 07:26	29°☾48'20	-1°-30'-59
max. Earth dist.	4491 Jan 10 11:35	20°☾26'13	10.88556 AU	minimum elong	4497 Mar 19 07:23	29°☾48'19	1°31'00
morning rise	4491 Jan 27 06:16	22°☾26'05		max. Earth dist.	4497 Mar 19 07:40	29°☾48'24	10.88553 AU
retrograde	4491 May 07 09:26	29°☾32'01			4497 Mar 20 22:19	0°☿	
opposition	4491 Jul 16 01:30	26°☾13'35	0°52'31	morning rise	4497 Apr 05 02:02	1°☿48'15	
min. Earth dist.	4491 Jul 16 02:32	26°☾13'24	8.90989 AU	retrograde	4497 Jul 17 09:03	9°☿07'38	
direct	4491 Sep 24 21:57	22°☾52'20		opposition	4497 Sep 26 03:31	5°☿46'07	-2°-2'-41
	4492 Jan 04 17:48	0°♊		min. Earth dist.	4497 Sep 26 02:44	5°☿46'16	8.85827 AU
evening set	4492 Jan 05 11:25	0°♊05'08		direct	4497 Dec 04 13:27	2°☿27'17	
				evening set	4498 Mar 14 12:17	9°☿35'54	
conjunction	4492 Jan 22 06:01	2°♊04'28	0°30'08				
minimum elong	4492 Jan 22 06:02	2°♊04'28	0°30'09	conjunction	4498 Mar 31 05:39	11°☿36'07	-1°-47'-58
max. Earth dist.	4492 Jan 22 04:35	2°♊04'02	10.92994 AU	minimum elong	4498 Mar 31 05:37	11°☿36'07	1°47'59
morning rise	4492 Feb 07 23:10	4°♊03'21		max. Earth dist.	4498 Mar 31 06:58	11°☿36'31	10.82576 AU
retrograde	4492 May 18 08:28	11°♊08'09		morning rise	4498 Apr 17 01:47	13°☿37'12	
opposition	4492 Jul 27 09:48	7°♊49'39	0°21'09	retrograde	4498 Jul 30 03:04	21°☿02'45	
min. Earth dist.	4492 Jul 27 10:43	7°♊49'28	8.94586 AU	opposition	4498 Oct 08 17:19	17°☿40'15	-2°-21'-6
direct	4492 Oct 06 06:07	4°♊29'10		min. Earth dist.	4498 Oct 08 15:45	17°☿40'33	8.79198 AU
evening set	4493 Jan 16 03:11	11°♊38'05		direct	4498 Dec 16 16:37	14°☿21'09	
				evening set	4499 Mar 26 14:28	21°☿33'23	
conjunction	4493 Feb 01 20:41	13°♊36'46	0°04'14				
minimum elong	4493 Feb 01 20:42	13°♊36'46	0°04'14	conjunction	4499 Apr 12 09:28	23°☿34'57	-2°00'-31
behind sun begin	4493 Feb 01 13:49	13°♊34'45		minimum elong	4499 Apr 12 09:27	23°☿34'56	2°00'32
behind sun end	4493 Feb 02 03:35	13°♊38'48		max. Earth dist.	4499 Apr 12 10:59	23°☿35'24	10.75308 AU
max. Earth dist.	4493 Feb 01 19:47	13°♊36'31	10.95732 AU	morning rise	4499 Apr 29 07:51	25°☿37'34	
	4493 Feb 13 13:09	15°♊			4499 Jun 08 23:09	0°♋	
morning rise	4493 Feb 18 13:23	15°♊35'13		retrograde	4499 Aug 12 01:03	3°♋09'51	
desc. node	4493 Apr 02 16:58	20°♊03'36			4499 Oct 18 10:55	30°♋☿	
retrograde	4493 May 30 09:39	22°♊40'20		opposition	4499 Oct 21 10:36	29°☿46'19	-2°-33'-37
opposition	4493 Aug 08 17:04	19°♊21'33	0°-10'-51	min. Earth dist.	4499 Oct 21 08:57	29°☿46'38	8.71408 AU
min. Earth dist.	4493 Aug 08 16:58	19°♊21'34	8.96426 AU	direct	4499 Dec 28 22:25	26°☿26'45	
direct	4493 Oct 18 10:12	16°♊01'46			4500 Mar 05 07:00	0°♋	
evening set	4494 Jan 27 17:05	23°♊08'00		evening set	4500 Apr 07 22:44	3°♋43'38	
conjunction	4494 Feb 13 09:49	25°♊06'20	0°-21'-53	conjunction	4500 Apr 24 20:00	5°♋46'52	-2°-7'-53
minimum elong	4494 Feb 13 09:48	25°♊06'20	0°21'54	minimum elong	4500 Apr 24 20:00	5°♋46'52	2°07'54
max. Earth dist.	4494 Feb 13 09:58	25°♊06'23	10.96655 AU	max. Earth dist.	4500 Apr 24 20:55	5°♋47'09	10.67043 AU
morning rise	4494 Mar 02 02:18	27°♊04'41		morning rise	4500 May 11 21:20	7°♋51'20	
	4494 Mar 28 16:26	0°♋			4500 Jul 31 08:34	15°♋	
retrograde	4494 Jun 11 11:20	4°♋11'30		retrograde	4500 Aug 25 03:58	15°♋30'40	
opposition	4494 Aug 21 00:05	0°♋52'16	0°-42'-22		4500 Sep 19 03:25	15°♋♋	
min. Earth dist.	4494 Aug 20 23:30	0°♋52'23	8.96436 AU	opposition	4500 Nov 03 07:46	12°♋06'05	-2°-39'-25
	4494 Sep 01 21:02	30°♋♊		min. Earth dist.	4500 Nov 03 06:40	12°♋06'18	8.62776 AU
direct	4494 Oct 30 10:35	27°♊33'01		direct	4501 Jan 10 09:55	8°♋45'50	
	4494 Dec 25 05:32	0°♋			4501 Apr 11 00:41	15°♋	
evening set	4495 Feb 08 06:53	4°♋37'53		evening set	4501 Apr 20 13:54	16°♋08'10	
conjunction	4495 Feb 24 23:02	6°♋36'12	0°-47'-2	conjunction	4501 May 07 14:22	18°♋13'26	-2°-9'-25
minimum elong	4495 Feb 24 23:00	6°♋36'11	0°47'03	minimum elong	4501 May 07 14:23	18°♋13'27	2°09'27
max. Earth dist.	4495 Feb 24 23:09	6°♋36'14	10.95731 AU	max. Earth dist.	4501 May 07 15:16	18°♋13'43	10.58124 AU
morning rise	4495 Mar 13 15:49	8°♋34'44		morning rise	4501 May 24 19:16	20°♋20'03	
retrograde	4495 Jun 23 15:46	15°♋44'33		retrograde	4501 Sep 07 13:39	28°♋06'22	
opposition	4495 Sep 02 07:32	12°♋24'44	-1°-12'-15	opposition	4501 Nov 16 09:01	24°♋40'46	-2°-37'-46
min. Earth dist.	4495 Sep 02 07:16	12°♋24'47	8.94618 AU	min. Earth dist.	4501 Nov 16 08:11	24°♋40'56	8.53655 AU
direct	4495 Nov 11 10:49	9°♋05'48		direct	4502 Jan 23 01:47	21°♋19'36	
evening set	4496 Feb 19 21:51	16°♋10'40		evening set	4502 May 03 12:38	28°♋48'04	
					4502 May 13 06:21	0°♌	
conjunction	4496 Mar 07 13:46	18°♋09'15	-1°-10'-22				
minimum elong	4496 Mar 07 13:44	18°♋09'15	1°10'23	conjunction	4502 May 20 17:10	0°♌55'38	-2°-4'-45
max. Earth dist.	4496 Mar 07 13:16	18°♋09'06	10.92996 AU	minimum elong	4502 May 20 17:11	0°♌55'39	2°04'47
morning rise	4496 Mar 24 07:19	20°♋08'19		max. Earth dist.	4502 May 20 18:27	0°♌56'02	10.48894 AU
retrograde	4496 Jul 04 22:18	27°♋22'22		morning rise	4502 Jun 07 02:05	3°♌04'36	



retrograde	4502 Sep 21 04:15	10°II57'33		behind sun end	4508 Aug 12 07:16	22°Ω06'38	
opposition	4502 Nov 29 14:26	7°II31'00	-2°-28'-19	max. Earth dist.	4508 Aug 12 04:46	22°Ω05'50	10.11983 AU
min. Earth dist.	4502 Nov 29 13:30	7°II31'11	8.44381 AU	morning rise	4508 Aug 30 07:23	24°Ω24'54	
direct	4503 Feb 04 23:28	4°II08'48			4508 Oct 19 18:36	0°൬	
evening set	4503 May 16 19:40	11°II43'55		retrograde	4508 Dec 12 22:14	2°൬32'22	
					4509 Feb 06 12:49	30°℞Ω	
conjunction	4503 Jun 03 04:44	13°II53'59	-1°-53'-43	opposition	4509 Feb 17 22:33	29°Ω04'30	0°37'25
minimum elong	4503 Jun 03 04:46	13°II54'00	1°53'45	min. Earth dist.	4509 Feb 17 21:54	29°Ω04'38	8.11999 AU
max. Earth dist.	4503 Jun 03 06:08	13°II54'26	10.39712 AU	direct	4509 Apr 26 03:07	25°Ω35'58	
morning rise	4503 Jun 20 17:57	16°II05'24			4509 Jul 08 09:22	0°൬	
retrograde	4503 Oct 05 00:30	24°II04'22		evening set	4509 Aug 08 22:04	3°൬43'27	
opposition	4503 Dec 12 23:58	20°II37'02	-2°-11'-1				
min. Earth dist.	4503 Dec 12 22:47	20°II37'16	8.35374 AU	conjunction	4509 Aug 27 00:35	6°൬02'22	0°45'01
direct	4504 Feb 18 02:35	17°II13'43		minimum elong	4509 Aug 27 00:33	6°൬02'21	0°45'02
evening set	4504 May 29 11:10	24°II55'45		max. Earth dist.	4509 Aug 27 01:10	6°൬02'33	10.12575 AU
				morning rise	4509 Sep 14 02:09	8°൬21'00	
conjunction	4504 Jun 16 00:55	27°II08'22	-1°-36'-32	retrograde	4509 Dec 27 01:05	16°൬25'03	
minimum elong	4504 Jun 16 00:58	27°II08'23	1°36'34	opposition	4510 Mar 03 20:14	12°൬57'50	1°13'46
max. Earth dist.	4504 Jun 16 01:53	27°II08'40	10.31078 AU	min. Earth dist.	4510 Mar 03 19:24	12°൬58'00	8.13757 AU
morning rise	4504 Jul 03 18:32	29°II22'14		direct	4510 May 10 08:07	9°൬28'49	
	4504 Jul 08 21:17	0°☾		evening set	4510 Aug 23 17:44	17°൬37'15	
retrograde	4504 Oct 18 02:09	7°☾26'10					
opposition	4504 Dec 25 13:41	3°☾58'13	-1°-46'-20	conjunction	4510 Sep 10 18:41	19°൬55'16	1°12'41
min. Earth dist.	4504 Dec 25 12:40	3°☾58'26	8.27196 AU	minimum elong	4510 Sep 10 18:38	19°൬55'16	1°12'41
direct	4505 Mar 02 10:24	0°☾33'43		max. Earth dist.	4510 Sep 10 19:20	19°൬55'29	10.15421 AU
evening set	4505 Jun 12 10:55	8°☾22'33		morning rise	4510 Sep 28 17:31	22°൬12'40	
					4510 Dec 26 09:13	0°♄	
conjunction	4505 Jun 30 05:11	10°☾37'32	-1°-13'-50	retrograde	4511 Jan 09 23:17	0°♄11'53	
minimum elong	4505 Jun 30 05:14	10°☾37'33	1°13'52		4511 Jan 24 13:14	30°℞൬	
max. Earth dist.	4505 Jun 30 05:36	10°☾37'40	10.23559 AU	opposition	4511 Mar 17 16:34	26°൬45'31	1°45'35
morning rise	4505 Jul 18 02:53	12°☾53'37		min. Earth dist.	4511 Mar 17 15:57	26°൬45'39	8.17698 AU
retrograde	4505 Nov 01 07:09	21°☾01'02		direct	4511 May 24 13:55	23°൬16'21	
opposition	4506 Jan 08 06:54	17°☾32'44	-1°-15'-19		4511 Aug 27 01:14	0°♄	
min. Earth dist.	4506 Jan 08 06:21	17°☾32'51	8.20392 AU	evening set	4511 Sep 07 10:03	1°♄23'50	
direct	4506 Mar 16 01:10	14°☾07'00					
evening set	4506 Jun 26 18:24	22°☾02'11		conjunction	4511 Sep 25 08:12	3°♄40'19	1°35'57
				minimum elong	4511 Sep 25 08:09	3°♄40'18	1°35'58
conjunction	4506 Jul 14 16:34	24°☾19'09	0°-46'-42	max. Earth dist.	4511 Sep 25 08:33	3°♄40'26	10.20332 AU
minimum elong	4506 Jul 14 16:36	24°☾19'09	0°46'43	morning rise	4511 Oct 13 03:21	5°♄55'55	
max. Earth dist.	4506 Jul 14 16:24	24°☾19'06	10.17640 AU	retrograde	4512 Jan 23 15:52	13°♄49'13	
morning rise	4506 Aug 01 17:25	26°☾36'57		opposition	4512 Mar 30 10:26	10°♄23'52	2°11'00
	4506 Aug 30 05:50	0°Ω		min. Earth dist.	4512 Mar 30 10:31	10°♄23'51	8.23568 AU
retrograde	4506 Nov 15 12:25	4°Ω46'08		direct	4512 Jun 06 18:28	6°♄54'50	
opposition	4507 Jan 22 02:42	1°Ω17'44	0°-39'-34	evening set	4512 Sep 20 21:03	14°♄59'35	
min. Earth dist.	4507 Jan 22 02:37	1°Ω17'45	8.15405 AU				
	4507 Feb 07 08:57	30°℞☾		conjunction	4512 Oct 08 15:37	17°♄14'05	1°53'35
direct	4507 Mar 29 22:18	27°☾50'53		minimum elong	4512 Oct 08 15:34	17°♄14'05	1°53'36
	4507 May 18 08:22	0°Ω		max. Earth dist.	4512 Oct 08 15:05	17°♄13'55	10.27008 AU
evening set	4507 Jul 11 08:05	5°Ω51'32		morning rise	4512 Oct 26 06:38	19°♄27'31	
				retrograde	4513 Feb 05 02:47	27°♄14'06	
conjunction	4507 Jul 29 09:06	8°Ω09'53	0°-16'-37	opposition	4513 Apr 13 00:54	23°♄49'53	2°28'47
minimum elong	4507 Jul 29 09:06	8°Ω09'53	0°16'38	min. Earth dist.	4513 Apr 13 01:26	23°♄49'46	8.31010 AU
max. Earth dist.	4507 Jul 29 08:56	8°Ω09'50	10.13701 AU	direct	4513 Jun 20 19:59	20°♄21'16	
morning rise	4507 Aug 16 11:45	10°Ω28'45		evening set	4513 Oct 05 00:49	28°♄21'41	
	4507 Sep 24 16:45	15°Ω			4513 Oct 18 03:40	0°ℳ	
retrograde	4507 Nov 29 17:45	18°Ω37'57					
opposition	4508 Feb 05 00:19	15°Ω09'42	0°-1'-10	conjunction	4513 Oct 22 15:28	0°ℳ33'58	2°04'48
min. Earth dist.	4508 Feb 05 00:05	15°Ω09'45	8.12552 AU	minimum elong	4513 Oct 22 15:26	0°ℳ33'58	2°04'49
	4508 Feb 06 23:39	15°℞Ω		max. Earth dist.	4513 Oct 22 14:18	0°ℳ33'36	10.35056 AU
asc. node	4508 Feb 16 13:46	14°Ω13'31		morning rise	4513 Nov 09 02:12	2°ℳ45'02	
direct	4508 Apr 11 23:38	11°Ω41'54		retrograde	4514 Feb 18 07:22	10°ℳ24'32	
	4508 Jun 13 06:25	15°Ω		opposition	4514 Apr 26 11:35	7°ℳ01'29	2°38'18
evening set	4508 Jul 25 01:56	19°Ω46'43		min. Earth dist.	4514 Apr 26 12:02	7°ℳ01'24	8.39591 AU
				direct	4514 Jul 04 18:19	3°ℳ33'37	
conjunction	4508 Aug 12 04:29	22°Ω05'45	0°14'39	evening set	4514 Oct 18 19:55	11°ℳ28'22	
minimum elong	4508 Aug 12 04:28	22°Ω05'45	0°14'39				
behind sun begin	4508 Aug 12 01:40	22°Ω04'51		conjunction	4514 Nov 05 06:41	13°ℳ38'20	2°09'19



minimum elong	4514 Nov 05 06:41	13° $\mathbb{M}$ 38'20	2°09'19	minimum elong	4521 Jan 17 03:54	26° $\mathfrak{Z}$ 53'33	0°41'58
max. Earth dist.	4514 Nov 05 05:35	13° $\mathbb{M}$ 37'59	10.44030 AU	max. Earth dist.	4521 Jan 17 03:50	26° $\mathfrak{Z}$ 53'32	10.92272 AU
	4514 Nov 16 04:41	15° $\mathbb{M}$		morning rise	4521 Feb 02 21:09	28° $\mathfrak{Z}$ 52'38	
morning rise	4514 Nov 22 13:18	15° $\mathbb{M}$ 47'01			4521 Feb 12 15:25	0° $\approx$	
retrograde	4515 Mar 03 05:46	23° $\mathbb{M}$ 19'28		retrograde	4521 May 14 04:39	5° $\approx$ 57'41	
opposition	4515 May 09 18:05	19° $\mathbb{M}$ 57'34	2°39'30	opposition	4521 Jul 23 00:10	2° $\approx$ 39'47	0°35'58
min. Earth dist.	4515 May 09 17:58	19° $\mathbb{M}$ 57'36	8.48848 AU	min. Earth dist.	4521 Jul 23 00:04	2° $\approx$ 39'49	8.94351 AU
direct	4515 Jul 18 11:58	16° $\mathbb{M}$ 30'41			4521 Sep 02 13:50	30° $\mathbb{R}$ $\mathfrak{Z}$	
evening set	4515 Nov 01 06:01	24° $\mathbb{M}$ 18'49		direct	4521 Oct 01 20:40	29° $\mathfrak{Z}$ 19'33	
					4521 Oct 30 17:02	0° $\approx$	
conjunction	4515 Nov 18 13:17	26° $\mathbb{M}$ 26'33	2°07'15	evening set	4522 Jan 12 01:54	6° $\approx$ 30'02	
minimum elong	4515 Nov 18 13:17	26° $\mathbb{M}$ 26'33	2°07'15				
max. Earth dist.	4515 Nov 18 12:53	26° $\mathbb{M}$ 26'25	10.53461 AU	conjunction	4522 Jan 28 19:55	8° $\approx$ 28'55	0°16'24
morning rise	4515 Dec 05 16:12	28° $\mathbb{M}$ 32'59		minimum elong	4522 Jan 28 19:55	8° $\approx$ 28'55	0°16'24
	4515 Dec 17 21:00	0° $\mathfrak{A}$		max. Earth dist.	4522 Jan 28 19:34	8° $\approx$ 28'49	10.95969 AU
retrograde	4516 Mar 15 00:06	5° $\mathfrak{A}$ 58'39		morning rise	4522 Feb 14 12:37	10° $\approx$ 27'26	
opposition	4516 May 21 20:10	2° $\mathfrak{A}$ 37'52	2°32'51		4522 Mar 30 11:51	15° $\approx$	
min. Earth dist.	4516 May 21 20:03	2° $\mathfrak{A}$ 37'54	8.58312 AU	retrograde	4522 May 26 05:17	17° $\approx$ 32'03	
	4516 Jun 29 14:57	30° $\mathbb{R}$ $\mathbb{M}$			4522 Jul 24 21:53	15° $\mathbb{R}$ $\approx$	
direct	4516 Jul 30 22:48	29° $\mathbb{M}$ 12'06		opposition	4522 Aug 04 08:11	14° $\approx$ 14'02	0°04'08
	4516 Aug 30 23:47	0° $\mathfrak{A}$		min. Earth dist.	4522 Aug 04 08:52	14° $\approx$ 13'54	8.97109 AU
evening set	4516 Nov 13 07:10	6° $\mathfrak{A}$ 53'09		desc. node	4522 Sep 22 00:22	11° $\approx$ 17'51	
				direct	4522 Oct 14 01:17	10° $\approx$ 54'31	
conjunction	4516 Nov 30 11:16	8° $\mathfrak{A}$ 58'48	1°59'06		4522 Dec 27 00:37	15° $\approx$	
minimum elong	4516 Nov 30 11:18	8° $\mathfrak{A}$ 58'48	1°59'06	evening set	4523 Jan 23 16:46	18° $\approx$ 01'42	
max. Earth dist.	4516 Nov 30 11:07	8° $\mathfrak{A}$ 58'45	10.62874 AU				
morning rise	4516 Dec 17 11:07	11° $\mathfrak{A}$ 03'12		conjunction	4523 Feb 09 09:41	20° $\approx$ 00'04	0°-9'-46
retrograde	4517 Mar 27 13:39	18° $\mathfrak{A}$ 22'40		minimum elong	4523 Feb 09 09:41	20° $\approx$ 00'04	0°09'47
opposition	4517 Jun 03 18:15	15° $\mathfrak{A}$ 02'54	2°19'08	behind sun begin	4523 Feb 09 03:55	19° $\approx$ 58'22	
min. Earth dist.	4517 Jun 03 18:41	15° $\mathfrak{A}$ 02'49	8.67523 AU	behind sun end	4523 Feb 09 15:26	20° $\approx$ 01'45	
direct	4517 Aug 13 02:43	11° $\mathfrak{A}$ 38'19		max. Earth dist.	4523 Feb 09 08:14	19° $\approx$ 59'39	10.97745 AU
evening set	4517 Nov 25 23:52	19° $\mathfrak{A}$ 12'11		morning rise	4523 Feb 26 02:18	21° $\approx$ 58'21	
				retrograde	4523 Jun 07 04:48	29° $\approx$ 04'01	
conjunction	4517 Dec 13 01:04	21° $\mathfrak{A}$ 15'56	1°45'34	opposition	4523 Aug 16 15:24	25° $\approx$ 45'36	0°-27'-43
minimum elong	4517 Dec 13 01:07	21° $\mathfrak{A}$ 15'57	1°45'34	min. Earth dist.	4523 Aug 16 16:28	25° $\approx$ 45'24	8.97874 AU
max. Earth dist.	4517 Dec 13 00:25	21° $\mathfrak{A}$ 15'44	10.71825 AU	direct	4523 Oct 26 03:46	22° $\approx$ 26'36	
morning rise	4517 Dec 29 22:32	23° $\mathfrak{A}$ 18'35		evening set	4524 Feb 04 06:45	29° $\approx$ 31'54	
	4518 Mar 14 18:05	0° $\mathfrak{Z}$			4524 Feb 08 06:56	0° $\mathfrak{H}$	
retrograde	4518 Apr 08 20:17	0° $\mathfrak{Z}$ 32'44					
	4518 May 04 07:43	30° $\mathbb{R}$ $\mathfrak{A}$		conjunction	4524 Feb 20 23:02	1° $\mathfrak{H}$ 30'06	0°-35'-24
opposition	4518 Jun 16 12:29	27° $\mathfrak{A}$ 13'47	1°59'24	minimum elong	4524 Feb 20 23:01	1° $\mathfrak{H}$ 30'06	0°35'26
min. Earth dist.	4518 Jun 16 13:22	27° $\mathfrak{A}$ 13'37	8.76072 AU	max. Earth dist.	4524 Feb 20 21:36	1° $\mathfrak{H}$ 29'41	10.97469 AU
direct	4518 Aug 26 03:40	23° $\mathfrak{A}$ 50'24		morning rise	4524 Mar 08 15:42	3° $\mathfrak{H}$ 28'26	
	4518 Nov 27 06:26	0° $\mathfrak{Z}$		retrograde	4524 Jun 18 08:29	10° $\mathfrak{H}$ 36'38	
evening set	4518 Dec 08 08:53	1° $\mathfrak{Z}$ 17'20		opposition	4524 Aug 27 22:39	7° $\mathfrak{H}$ 17'35	0°-58'-29
				min. Earth dist.	4524 Aug 27 23:20	7° $\mathfrak{H}$ 17'28	8.96590 AU
conjunction	4518 Dec 25 07:41	3° $\mathfrak{Z}$ 19'26	1°27'33	direct	4524 Nov 06 06:23	3° $\mathfrak{H}$ 58'55	
minimum elong	4518 Dec 25 07:44	3° $\mathfrak{Z}$ 19'27	1°27'34	evening set	4525 Feb 14 21:16	11° $\mathfrak{H}$ 03'41	
max. Earth dist.	4518 Dec 25 06:28	3° $\mathfrak{Z}$ 19'04	10.79932 AU				
morning rise	4519 Jan 11 03:25	5° $\mathfrak{Z}$ 20'37		conjunction	4525 Mar 03 13:20	13° $\mathfrak{H}$ 02'05	0°-59'-42
retrograde	4519 Apr 21 01:03	12° $\mathfrak{Z}$ 30'30		minimum elong	4525 Mar 03 13:18	13° $\mathfrak{H}$ 02'04	0°59'43
opposition	4519 Jun 29 03:05	9° $\mathfrak{Z}$ 12'09	1°34'49	max. Earth dist.	4525 Mar 03 12:37	13° $\mathfrak{H}$ 01'52	10.95178 AU
min. Earth dist.	4519 Jun 29 03:40	9° $\mathfrak{Z}$ 12'02	8.83599 AU	morning rise	4525 Mar 20 06:19	15° $\mathfrak{H}$ 00'49	
direct	4519 Sep 07 22:49	5° $\mathfrak{Z}$ 49'56		retrograde	4525 Jun 30 15:00	22° $\mathfrak{H}$ 12'49	
evening set	4519 Dec 20 11:15	13° $\mathfrak{Z}$ 10'28		opposition	4525 Sep 09 07:12	18° $\mathfrak{H}$ 52'55	-1°-27'-3
				min. Earth dist.	4525 Sep 09 07:17	18° $\mathfrak{H}$ 52'55	8.93367 AU
conjunction	4520 Jan 06 08:13	15° $\mathfrak{Z}$ 11'14	1°06'01	direct	4525 Nov 18 06:01	15° $\mathfrak{H}$ 34'22	
minimum elong	4520 Jan 06 08:15	15° $\mathfrak{Z}$ 11'14	1°06'02	evening set	4526 Feb 26 13:37	22° $\mathfrak{H}$ 39'52	
max. Earth dist.	4520 Jan 06 07:27	15° $\mathfrak{Z}$ 11'00	10.86849 AU				
morning rise	4520 Jan 23 02:34	17° $\mathfrak{Z}$ 11'13		conjunction	4526 Mar 15 05:45	24° $\mathfrak{H}$ 38'46	-1°-21'-43
retrograde	4520 May 02 03:35	24° $\mathfrak{Z}$ 18'02		minimum elong	4526 Mar 15 05:43	24° $\mathfrak{H}$ 38'45	1°21'43
opposition	4520 Jul 10 14:44	21° $\mathfrak{Z}$ 00'01	1°06'35	max. Earth dist.	4526 Mar 15 04:57	24° $\mathfrak{H}$ 38'32	10.91026 AU
min. Earth dist.	4520 Jul 10 14:40	21° $\mathfrak{Z}$ 00'02	8.89779 AU	morning rise	4526 Mar 31 23:41	26° $\mathfrak{H}$ 38'15	
direct	4520 Sep 19 11:34	17° $\mathfrak{Z}$ 38'53			4526 May 01 17:40	0° $\mathbb{Y}$	
evening set	4520 Dec 31 08:28	24° $\mathfrak{Z}$ 53'52		retrograde	4526 Jul 13 00:30	3° $\mathbb{Y}$ 55'11	
				opposition	4526 Sep 21 17:35	0° $\mathbb{Y}$ 34'15	-1°-52'-18
conjunction	4521 Jan 17 03:53	26° $\mathfrak{Z}$ 53'32	0°41'58	min. Earth dist.	4526 Sep 21 17:57	0° $\mathbb{Y}$ 34'11	8.88383 AU



	4526 Sep 29 09:23	30° $\text{R}\text{H}$		direct	4533 Feb 11 10:33	11° $\text{II}25'36$	
direct	4526 Nov 30 07:00	27° $\text{H}15'31$		evening set	4533 May 23 12:55	19° $\text{II}05'14$	
	4527 Jan 27 19:21	0° $\text{Y}$					
evening set	4527 Mar 10 09:16	4° $\text{Y}23'03$		conjunction	4533 Jun 10 00:29	21° $\text{II}16'55$	-1°-45'-12
				minimum elong	4533 Jun 10 00:32	21° $\text{II}16'56$	1°45'14
conjunction	4527 Mar 27 01:59	6° $\text{Y}22'48$	-1°-40'-31	max. Earth dist.	4533 Jun 10 01:19	21° $\text{II}17'11$	10.32824 AU
minimum elong	4527 Mar 27 01:57	6° $\text{Y}22'47$	1°40'31	morning rise	4533 Jun 27 16:21	23° $\text{II}29'58$	
max. Earth dist.	4527 Mar 27 00:40	6° $\text{Y}22'25$	10.85218 AU		4533 Aug 30 06:39	0° $\text{S}$	
morning rise	4527 Apr 12 21:24	8° $\text{Y}23'21$		retrograde	4533 Oct 11 23:26	1° $\text{S}32'34$	
retrograde	4527 Jul 25 14:35	15° $\text{Y}46'07$			4533 Nov 24 04:51	30° $\text{R}\text{II}$	
opposition	4527 Oct 04 06:16	12° $\text{Y}24'03$	-2°-13'-10	opposition	4533 Dec 19 17:21	28° $\text{II}04'12$	-1°-58'-38
min. Earth dist.	4527 Oct 04 06:58	12° $\text{Y}23'55$	8.81860 AU	min. Earth dist.	4533 Dec 19 16:32	28° $\text{II}04'22$	8.28807 AU
direct	4527 Dec 12 09:58	9° $\text{Y}04'54$		direct	4534 Feb 24 17:00	24° $\text{II}39'36$	
evening set	4528 Mar 21 09:11	16° $\text{Y}15'39$			4534 May 17 02:35	0° $\text{S}$	
				evening set	4534 Jun 06 09:11	2° $\text{S}26'05$	
conjunction	4528 Apr 07 03:15	18° $\text{Y}16'37$	-1°-55'-15				
minimum elong	4528 Apr 07 03:14	18° $\text{Y}16'36$	1°55'16	conjunction	4534 Jun 24 01:34	4° $\text{S}40'15$	-1°-24'-55
max. Earth dist.	4528 Apr 07 02:23	18° $\text{Y}16'21$	10.77999 AU	minimum elong	4534 Jun 24 01:37	4° $\text{S}40'16$	1°24'56
morning rise	4528 Apr 24 00:38	20° $\text{Y}18'35$		max. Earth dist.	4534 Jun 24 03:07	4° $\text{S}40'45$	10.24969 AU
retrograde	4528 Aug 06 08:45	27° $\text{Y}47'58$		morning rise	4534 Jul 11 21:36	6° $\text{S}55'36$	
opposition	4528 Oct 15 22:09	24° $\text{Y}24'38$	-2°-28'-36	retrograde	4534 Oct 26 03:05	15° $\text{S}02'21$	
min. Earth dist.	4528 Oct 15 22:27	24° $\text{Y}24'34$	8.74065 AU	opposition	4535 Jan 02 09:18	11° $\text{S}33'36$	-1°-30'-19
direct	4528 Dec 23 16:14	21° $\text{Y}04'55$		min. Earth dist.	4535 Jan 02 07:54	11° $\text{S}33'54$	8.21599 AU
evening set	4529 Apr 02 14:25	28° $\text{Y}19'55$		direct	4535 Mar 10 05:25	8° $\text{S}07'55$	
	4529 Apr 16 09:05	0° $\text{S}$		evening set	4535 Jun 20 13:27	16° $\text{S}00'57$	
conjunction	4529 Apr 19 10:39	0° $\text{S}22'28$	-2°-5'-8	conjunction	4535 Jul 08 10:06	18° $\text{S}17'16$	0°-59'-37
minimum elong	4529 Apr 19 10:38	0° $\text{S}22'28$	2°05'09	minimum elong	4535 Jul 08 10:09	18° $\text{S}17'17$	0°59'38
max. Earth dist.	4529 Apr 19 11:07	0° $\text{S}22'36$	10.69663 AU	max. Earth dist.	4535 Jul 08 12:11	18° $\text{S}17'56$	10.18572 AU
morning rise	4529 May 06 10:30	2° $\text{S}26'09$		morning rise	4535 Jul 26 09:35	20° $\text{S}34'32$	
retrograde	4529 Aug 19 09:59	10° $\text{S}02'40$		retrograde	4535 Nov 09 08:41	28° $\text{S}43'53$	
opposition	4529 Oct 28 17:40	6° $\text{S}38'04$	-2°-37'-40	opposition	4536 Jan 16 04:22	25° $\text{S}15'03$	0°-56'-26
min. Earth dist.	4529 Oct 28 16:56	6° $\text{S}38'12$	8.65315 AU	min. Earth dist.	4536 Jan 16 02:28	25° $\text{S}15'26$	8.16064 AU
direct	4530 Jan 05 02:07	3° $\text{S}17'37$		direct	4536 Mar 22 23:31	21° $\text{S}48'23$	
evening set	4530 Apr 15 02:25	10° $\text{S}37'49$		evening set	4536 Jul 04 00:46	29° $\text{S}47'15$	
					4536 Jul 05 17:10	0° $\text{S}$	
conjunction	4530 May 02 01:31	12° $\text{S}42'18$	-2°-9'-28	conjunction	4536 Jul 22 00:46	2° $\text{S}05'15$	0°-30'-37
minimum elong	4530 May 02 01:31	12° $\text{S}42'18$	2°09'29	minimum elong	4536 Jul 22 00:48	2° $\text{S}05'15$	0°30'39
max. Earth dist.	4530 May 02 02:22	12° $\text{S}42'34$	10.60561 AU	max. Earth dist.	4536 Jul 22 02:56	2° $\text{S}05'57$	10.14039 AU
morning rise	4530 May 19 04:36	14° $\text{S}48'04$		morning rise	4536 Aug 09 02:41	4° $\text{S}23'52$	
	4530 May 20 20:18	15° $\text{S}$		retrograde	4536 Nov 22 15:52	12° $\text{S}34'03$	
retrograde	4530 Sep 01 18:17	22° $\text{S}31'46$		opposition	4537 Jan 29 01:42	9° $\text{S}05'26$	0°-18'-53
opposition	4530 Nov 10 17:05	19° $\text{S}06'00$	-2°-39'-34	min. Earth dist.	4537 Jan 28 23:52	9° $\text{S}05'49$	8.12567 AU
min. Earth dist.	4530 Nov 10 16:01	19° $\text{S}06'12$	8.55978 AU	direct	4537 Apr 05 21:47	5° $\text{S}37'56$	
direct	4531 Jan 17 14:18	15° $\text{S}44'38$		evening set	4537 Jul 18 17:33	13° $\text{S}41'36$	
evening set	4531 Apr 27 21:50	23° $\text{S}10'52$			4537 Jul 28 23:31	15° $\text{S}$	
				asc. node	4537 Aug 01 12:03	15° $\text{S}27'12$	
conjunction	4531 May 15 00:28	25° $\text{S}17'34$	-2°-7'-43				
minimum elong	4531 May 15 00:29	25° $\text{S}17'34$	2°07'45	conjunction	4537 Aug 05 19:37	16° $\text{S}00'35$	0°00'22
max. Earth dist.	4531 May 15 00:59	25° $\text{S}17'44$	10.51090 AU	minimum elong	4537 Aug 05 19:37	16° $\text{S}00'35$	0°00'23
morning rise	4531 Jun 01 07:29	27° $\text{S}25'39$		behind sun begin	4537 Aug 05 12:18	15° $\text{S}58'15$	
	4531 Jun 23 08:13	0° $\text{II}$		behind sun end	4537 Aug 06 02:57	16° $\text{S}02'55$	
retrograde	4531 Sep 15 06:39	5° $\text{II}16'21$		max. Earth dist.	4537 Aug 05 21:15	16° $\text{S}01'02$	10.11663 AU
opposition	4531 Nov 23 20:55	1° $\text{II}49'32$	-2°-33'-46	morning rise	4537 Aug 23 22:36	18° $\text{S}19'51$	
min. Earth dist.	4531 Nov 23 20:04	1° $\text{II}49'42$	8.46469 AU	retrograde	4537 Dec 06 22:52	26° $\text{S}29'01$	
	4531 Dec 18 09:22	30° $\text{R}\text{S}$		opposition	4538 Feb 12 00:22	23° $\text{S}00'56$	0°19'58
direct	4532 Jan 30 09:13	28° $\text{S}27'09$		min. Earth dist.	4538 Feb 11 23:07	23° $\text{S}01'11$	8.11338 AU
	4532 Mar 12 09:10	0° $\text{II}$		direct	4538 Apr 19 23:58	19° $\text{S}32'47$	
evening set	4532 May 10 01:08	5° $\text{II}59'56$		evening set	4538 Aug 02 13:43	27° $\text{S}39'51$	
conjunction	4532 May 27 07:58	8° $\text{II}09'05$	-1°-59'-37	conjunction	4538 Aug 20 16:19	29° $\text{S}59'01$	0°31'25
minimum elong	4532 May 27 08:00	8° $\text{II}09'06$	1°59'39	minimum elong	4538 Aug 20 16:17	29° $\text{S}59'01$	0°31'26
max. Earth dist.	4532 May 27 08:15	8° $\text{II}09'10$	10.41687 AU		4538 Aug 20 19:20	0° $\text{np}$	
morning rise	4532 Jun 13 19:21	10° $\text{II}19'38$		max. Earth dist.	4538 Aug 20 17:22	29° $\text{S}59'22$	10.11597 AU
retrograde	4532 Sep 28 00:17	18° $\text{II}16'46$		morning rise	4538 Sep 07 18:44	2° $\text{np}18'08$	
opposition	4532 Dec 06 05:09	14° $\text{II}49'05$	-2°-20'-3	retrograde	4538 Dec 21 03:36	10° $\text{np}24'31$	
min. Earth dist.	4532 Dec 06 04:35	14° $\text{II}49'11$	8.37252 AU				



opposition	4539 Feb 25 23:07	6° $\cap$ 57'12	0°57'41	retrograde	4545 Mar 09 19:47	0° $\nearrow$ 41'00	
min. Earth dist.	4539 Feb 25 22:12	6° $\cap$ 57'23	8.12460 AU		4545 Apr 06 21:32	30° $\R$ $\cap$	
direct	4539 May 04 05:49	3° $\cap$ 28'38		opposition	4545 May 16 11:10	27° $\cap$ 20'07	2°36'28
evening set	4539 Aug 17 10:34	11° $\cap$ 37'24		min. Earth dist.	4545 May 16 13:00	27° $\cap$ 19'46	8.54147 AU
				direct	4545 Jul 25 08:46	23° $\cap$ 54'06	
conjunction	4539 Sep 04 12:13	13° $\cap$ 55'58	1°00'34		4545 Oct 25 00:18	0° $\nearrow$	
minimum elong	4539 Sep 04 12:10	13° $\cap$ 55'57	1°00'35	evening set	4545 Nov 07 23:39	1° $\nearrow$ 38'52	
max. Earth dist.	4539 Sep 04 12:58	13° $\cap$ 56'13	10.13852 AU				
morning rise	4539 Sep 22 12:35	16° $\cap$ 14'07		conjunction	4545 Nov 25 05:02	3° $\nearrow$ 45'30	2°03'13
retrograde	4540 Jan 04 03:04	24° $\cap$ 16'09		minimum elong	4545 Nov 25 05:04	3° $\nearrow$ 45'30	2°03'13
opposition	4540 Mar 10 20:50	20° $\cap$ 49'46	1°31'49	max. Earth dist.	4545 Nov 25 02:21	3° $\nearrow$ 44'40	10.58507 AU
min. Earth dist.	4540 Mar 10 19:55	20° $\cap$ 49'57	8.15857 AU	morning rise	4545 Dec 12 06:23	5° $\nearrow$ 50'54	
direct	4540 May 17 13:32	17° $\cap$ 21'03		retrograde	4546 Mar 22 11:03	13° $\nearrow$ 13'34	
evening set	4540 Aug 31 05:20	25° $\cap$ 29'34		opposition	4546 May 29 11:46	9° $\nearrow$ 53'34	2°25'46
				min. Earth dist.	4546 May 29 13:10	9° $\nearrow$ 53'17	8.63033 AU
conjunction	4540 Sep 18 04:48	27° $\cap$ 46'51	1°26'01	direct	4546 Aug 07 17:55	6° $\nearrow$ 28'33	
minimum elong	4540 Sep 18 04:45	27° $\cap$ 46'50	1°26'02	evening set	4546 Nov 20 20:35	14° $\nearrow$ 06'13	
max. Earth dist.	4540 Sep 18 05:28	27° $\cap$ 47'03	10.18270 AU				
	4540 Oct 05 15:10	0° $\underline{\Delta}$		conjunction	4546 Dec 07 23:07	16° $\nearrow$ 10'55	1°51'56
morning rise	4540 Oct 06 01:53	0° $\underline{\Delta}$ 03'22		minimum elong	4546 Dec 07 23:09	16° $\nearrow$ 10'56	1°51'56
retrograde	4541 Jan 16 22:14	7° $\underline{\Delta}$ 59'46		max. Earth dist.	4546 Dec 07 21:04	16° $\nearrow$ 10'18	10.67221 AU
opposition	4541 Mar 24 16:24	4° $\underline{\Delta}$ 34'25	2°00'19	morning rise	4546 Dec 24 21:45	18° $\nearrow$ 14'29	
min. Earth dist.	4541 Mar 24 15:15	4° $\underline{\Delta}$ 34'39	8.21272 AU	retrograde	4547 Apr 03 21:28	25° $\nearrow$ 31'33	
direct	4541 May 31 19:31	1° $\underline{\Delta}$ 05'48		opposition	4547 Jun 11 08:19	22° $\nearrow$ 12'14	2°08'31
evening set	4541 Sep 14 19:42	9° $\underline{\Delta}$ 12'10		min. Earth dist.	4547 Jun 11 09:16	22° $\nearrow$ 12'03	8.71427 AU
				direct	4547 Aug 20 21:40	18° $\nearrow$ 48'14	
conjunction	4541 Oct 02 16:00	11° $\underline{\Delta}$ 27'36	1°46'18	evening set	4547 Dec 03 09:34	26° $\nearrow$ 18'52	
minimum elong	4541 Oct 02 15:57	11° $\underline{\Delta}$ 27'35	1°46'19				
max. Earth dist.	4541 Oct 02 16:41	11° $\underline{\Delta}$ 27'49	10.24517 AU	conjunction	4547 Dec 20 09:41	28° $\nearrow$ 21'52	1°35'45
morning rise	4541 Oct 20 08:56	13° $\underline{\Delta}$ 42'01		minimum elong	4547 Dec 20 09:44	28° $\nearrow$ 21'53	1°35'45
retrograde	4542 Jan 30 12:54	21° $\underline{\Delta}$ 31'50		max. Earth dist.	4547 Dec 20 08:20	28° $\nearrow$ 21'28	10.75263 AU
opposition	4542 Apr 07 08:49	18° $\underline{\Delta}$ 07'35	2°21'37		4548 Jan 02 22:11	0° $\bar{\Theta}$	
min. Earth dist.	4542 Apr 07 08:00	18° $\underline{\Delta}$ 07'44	8.28292 AU	morning rise	4548 Jan 06 06:09	0° $\bar{\Theta}$ 23'51	
direct	4542 Jun 14 22:21	14° $\underline{\Delta}$ 39'17		retrograde	4548 Apr 15 05:05	7° $\bar{\Theta}$ 36'12	
evening set	4542 Sep 29 03:22	22° $\underline{\Delta}$ 41'51		opposition	4548 Jun 23 01:00	4° $\bar{\Theta}$ 17'23	1°45'53
				min. Earth dist.	4548 Jun 23 02:07	4° $\bar{\Theta}$ 17'10	8.78970 AU
conjunction	4542 Oct 16 19:55	24° $\underline{\Delta}$ 55'08	2°00'27	direct	4548 Sep 01 18:34	0° $\bar{\Theta}$ 54'23	
minimum elong	4542 Oct 16 19:53	24° $\underline{\Delta}$ 55'07	2°00'28	evening set	4548 Dec 14 15:31	8° $\bar{\Theta}$ 18'24	
max. Earth dist.	4542 Oct 16 20:06	24° $\underline{\Delta}$ 55'11	10.32126 AU				
morning rise	4542 Nov 03 08:26	27° $\underline{\Delta}$ 07'13		conjunction	4548 Dec 31 13:29	10° $\bar{\Theta}$ 19'58	1°15'36
	4542 Nov 27 17:36	0° $\cap$		minimum elong	4548 Dec 31 13:31	10° $\bar{\Theta}$ 19'58	1°15'37
retrograde	4543 Feb 12 22:10	4° $\cap$ 50'01		max. Earth dist.	4548 Dec 31 12:01	10° $\bar{\Theta}$ 19'31	10.82288 AU
opposition	4543 Apr 20 21:41	1° $\cap$ 26'54	2°34'51	morning rise	4549 Jan 17 08:24	12° $\bar{\Theta}$ 20'39	
min. Earth dist.	4543 Apr 20 21:51	1° $\cap$ 26'52	8.36408 AU	retrograde	4549 Apr 27 08:11	19° $\bar{\Theta}$ 29'24	
	4543 May 09 16:08	30° $\R$ $\underline{\Delta}$		opposition	4549 Jul 05 14:39	16° $\bar{\Theta}$ 10'53	1°19'03
direct	4543 Jun 28 21:32	27° $\underline{\Delta}$ 59'11		min. Earth dist.	4549 Jul 05 16:18	16° $\bar{\Theta}$ 10'34	8.85358 AU
	4543 Aug 17 07:23	0° $\cap$		direct	4549 Sep 14 10:08	12° $\bar{\Theta}$ 48'48	
evening set	4543 Oct 13 02:49	5° $\cap$ 56'39		evening set	4549 Dec 26 15:25	20° $\bar{\Theta}$ 06'55	
conjunction	4543 Oct 30 15:26	8° $\cap$ 07'40	2°07'57	conjunction	4550 Jan 12 11:29	22° $\bar{\Theta}$ 07'16	0°52'29
minimum elong	4543 Oct 30 15:25	8° $\cap$ 07'40	2°07'57	minimum elong	4550 Jan 12 11:31	22° $\bar{\Theta}$ 07'17	0°52'30
max. Earth dist.	4543 Oct 30 14:32	8° $\cap$ 07'23	10.40590 AU	max. Earth dist.	4550 Jan 12 09:32	22° $\bar{\Theta}$ 06'41	10.88023 AU
morning rise	4543 Nov 16 23:45	10° $\cap$ 17'24		morning rise	4550 Jan 29 05:25	24° $\bar{\Theta}$ 07'00	
	4543 Dec 29 16:37	15° $\cap$			4550 Mar 31 21:59	0° $\approx$	
retrograde	4544 Feb 25 23:40	17° $\cap$ 53'11		retrograde	4550 May 09 08:48	1° $\approx$ 13'26	
	4544 Apr 27 04:15	15° $\R$ $\cap$			4550 Jun 17 21:18	30° $\R$ $\bar{\Theta}$	
opposition	4544 May 03 06:32	14° $\cap$ 31'14	2°39'43	opposition	4550 Jul 18 01:38	27° $\bar{\Theta}$ 54'59	0°49'16
min. Earth dist.	4544 May 03 07:49	14° $\cap$ 30'59	8.45150 AU	min. Earth dist.	4550 Jul 18 02:57	27° $\bar{\Theta}$ 54'44	8.90345 AU
direct	4544 Jul 11 17:51	11° $\cap$ 04'18		direct	4550 Sep 26 22:45	24° $\bar{\Theta}$ 33'44	
	4544 Sep 20 21:17	15° $\cap$			4550 Dec 22 18:07	0° $\approx$	
evening set	4544 Oct 25 17:44	18° $\cap$ 55'46		evening set	4551 Jan 07 10:45	1° $\approx$ 46'56	
conjunction	4544 Nov 12 02:32	21° $\cap$ 04'32	2°08'46	conjunction	4551 Jan 24 05:25	3° $\approx$ 46'23	0°27'24
minimum elong	4544 Nov 12 02:32	21° $\cap$ 04'32	2°08'45	minimum elong	4551 Jan 24 05:26	3° $\approx$ 46'23	0°27'25
max. Earth dist.	4544 Nov 12 00:25	21° $\cap$ 03'52	10.49503 AU	max. Earth dist.	4551 Jan 24 04:01	3° $\approx$ 45'58	10.92248 AU
morning rise	4544 Nov 29 07:06	23° $\cap$ 12'01		morning rise	4551 Feb 09 22:37	5° $\approx$ 45'23	
	4545 Feb 10 03:11	0° $\nearrow$		retrograde	4551 May 21 10:01	12° $\approx$ 50'51	



opposition	4551 Jul 30 10:26	9° $\approx$ 32'17	0°17'45	retrograde	4557 Aug 01 07:47	22° $\Upsilon$ 55'29	
min. Earth dist.	4551 Jul 30 10:50	9° $\approx$ 32'12	8.93742 AU	opposition	4557 Oct 10 21:45	19° $\Upsilon$ 32'49	-2°-22'-41
direct	4551 Oct 09 06:10	6° $\approx$ 11'48		min. Earth dist.	4557 Oct 10 19:58	19° $\Upsilon$ 33'09	8.77945 AU
evening set	4552 Jan 19 02:56	13° $\approx$ 21'11		direct	4557 Dec 18 18:51	16° $\Upsilon$ 13'35	
	4552 Feb 02 01:27	15° $\approx$		evening set	4558 Mar 28 18:20	23° $\Upsilon$ 26'32	
conjunction	4552 Feb 04 20:34	15° $\approx$ 20'01	0°01'24	conjunction	4558 Apr 14 13:24	25° $\Upsilon$ 28'17	-2°-1'-30
minimum elong	4552 Feb 04 20:35	15° $\approx$ 20'01	0°01'24	minimum elong	4558 Apr 14 13:23	25° $\Upsilon$ 28'16	2°01'31
behind sun begin	4552 Feb 04 13:36	15° $\approx$ 17'57		max. Earth dist.	4558 Apr 14 14:32	25° $\Upsilon$ 28'37	10.74095 AU
behind sun end	4552 Feb 05 03:34	15° $\approx$ 22'04		morning rise	4558 May 01 12:06	27° $\Upsilon$ 31'07	
max. Earth dist.	4552 Feb 04 20:18	15° $\approx$ 19'57	10.94796 AU		4558 May 23 05:26	0° $\delta$	
morning rise	4552 Feb 21 13:16	17° $\approx$ 18'37		retrograde	4558 Aug 14 05:57	5° $\delta$ 04'14	
desc. node	4552 Feb 24 06:34	17° $\approx$ 37'35		opposition	4558 Oct 23 15:39	1° $\delta$ 40'32	-2°-34'-28
retrograde	4552 Jun 01 11:01	24° $\approx$ 24'30		min. Earth dist.	4558 Oct 23 14:17	1° $\delta$ 40'48	8.70250 AU
opposition	4552 Aug 10 18:15	21° $\approx$ 05'37	0°-14'-17		4558 Nov 15 14:47	30° $\mathcal{R}$ $\Upsilon$	
min. Earth dist.	4552 Aug 10 18:01	21° $\approx$ 05'40	8.95409 AU	direct	4558 Dec 31 03:07	28° $\Upsilon$ 20'49	
direct	4552 Oct 20 09:47	17° $\approx$ 45'48			4559 Feb 13 05:57	0° $\delta$	
evening set	4553 Jan 29 17:30	24° $\approx$ 52'36		evening set	4559 Apr 10 03:18	5° $\delta$ 38'21	
conjunction	4553 Feb 15 10:14	26° $\approx$ 51'06	0°-24'-40	conjunction	4559 Apr 27 00:51	7° $\delta$ 41'48	-2°-8'-12
minimum elong	4553 Feb 15 10:13	26° $\approx$ 51'06	0°24'41	minimum elong	4559 Apr 27 00:50	7° $\delta$ 41'48	2°08'14
max. Earth dist.	4553 Feb 15 10:06	26° $\approx$ 51'04	10.95563 AU	max. Earth dist.	4559 Apr 27 02:05	7° $\delta$ 42'11	10.65955 AU
morning rise	4553 Mar 04 02:48	28° $\approx$ 49'36		morning rise	4559 May 14 02:30	9° $\delta$ 46'30	
	4553 Mar 14 08:38	0° $\mathcal{H}$			4559 Jul 02 21:19	15° $\delta$	
retrograde	4553 Jun 13 14:16	5° $\mathcal{H}$ 57'16		retrograde	4559 Aug 27 10:04	17° $\delta$ 26'31	
opposition	4553 Aug 23 01:55	2° $\mathcal{H}$ 37'56	0°-45'-43		4559 Oct 23 19:17	15° $\mathcal{R}$ $\delta$	
min. Earth dist.	4553 Aug 23 01:52	2° $\mathcal{H}$ 37'57	8.95287 AU	opposition	4559 Nov 05 13:09	14° $\delta$ 01'48	-2°-39'-25
	4553 Oct 03 00:26	30° $\mathcal{R}$ $\approx$		min. Earth dist.	4559 Nov 05 11:51	14° $\delta$ 02'03	8.61770 AU
direct	4553 Nov 01 11:38	29° $\approx$ 18'36		direct	4560 Jan 12 14:39	10° $\delta$ 41'25	
	4553 Nov 30 11:22	0° $\mathcal{H}$			4560 Mar 25 21:58	15° $\delta$	
evening set	4554 Feb 10 07:56	6° $\mathcal{H}$ 24'07		evening set	4560 Apr 21 19:07	18° $\delta$ 04'21	
conjunction	4554 Feb 27 00:01	8° $\mathcal{H}$ 22'35	0°-49'-40	conjunction	4560 May 08 20:00	20° $\delta$ 09'49	-2°-9'-3
minimum elong	4554 Feb 27 00:00	8° $\mathcal{H}$ 22'35	0°49'42	minimum elong	4560 May 08 20:01	20° $\delta$ 09'49	2°09'05
max. Earth dist.	4554 Feb 26 23:30	8° $\mathcal{H}$ 22'26	10.94531 AU	max. Earth dist.	4560 May 08 22:05	20° $\delta$ 10'28	10.57213 AU
morning rise	4554 Mar 15 17:00	10° $\mathcal{H}$ 21'19		morning rise	4560 May 26 01:08	22° $\delta$ 16'37	
retrograde	4554 Jun 25 17:34	17° $\mathcal{H}$ 32'03			4560 Aug 31 12:40	0° $\Pi$	
opposition	4554 Sep 04 10:06	14° $\mathcal{H}$ 12'04	-1°-15'-22	retrograde	4560 Sep 08 19:26	0° $\Pi$ 03'30	
min. Earth dist.	4554 Sep 04 10:09	14° $\mathcal{H}$ 12'04	8.93385 AU		4560 Sep 17 03:00	30° $\mathcal{R}$ $\delta$	
direct	4554 Nov 13 11:43	10° $\mathcal{H}$ 53'02		opposition	4560 Nov 17 14:45	26° $\delta$ 37'47	-2°-36'-53
evening set	4555 Feb 21 23:26	17° $\mathcal{H}$ 58'36		min. Earth dist.	4560 Nov 17 12:57	26° $\delta$ 38'08	8.52861 AU
				direct	4561 Jan 24 07:29	23° $\delta$ 16'32	
conjunction	4555 Mar 10 15:28	19° $\mathcal{H}$ 57'22	-1°-12'-45		4561 Apr 28 11:58	0° $\Pi$	
minimum elong	4555 Mar 10 15:26	19° $\mathcal{H}$ 57'21	1°12'47	evening set	4561 May 04 18:25	0° $\Pi$ 45'28	
max. Earth dist.	4555 Mar 10 15:22	19° $\mathcal{H}$ 57'20	10.91732 AU				
morning rise	4555 Mar 27 09:08	21° $\mathcal{H}$ 56'37		conjunction	4561 May 21 23:20	2° $\Pi$ 53'13	-2°-3'-40
retrograde	4555 Jul 08 01:07	29° $\mathcal{H}$ 11'39		minimum elong	4561 May 21 23:22	2° $\Pi$ 53'14	2°03'41
opposition	4555 Sep 16 19:36	25° $\mathcal{H}$ 50'52	-1°-42'-8	max. Earth dist.	4561 May 22 01:54	2° $\Pi$ 54'01	10.48235 AU
min. Earth dist.	4555 Sep 16 18:58	25° $\mathcal{H}$ 50'59	8.89757 AU	morning rise	4561 Jun 08 08:29	5° $\Pi$ 02'20	
direct	4555 Nov 25 14:06	22° $\mathcal{H}$ 31'57		retrograde	4561 Sep 22 10:54	12° $\Pi$ 55'39	
evening set	4556 Mar 04 17:29	29° $\mathcal{H}$ 38'48		opposition	4561 Nov 30 20:27	9° $\Pi$ 29'00	-2°-26'-33
	4556 Mar 07 17:22	0° $\Upsilon$		min. Earth dist.	4561 Nov 30 18:24	9° $\Pi$ 29'24	8.43879 AU
				direct	4562 Feb 06 05:16	6° $\Pi$ 06'44	
conjunction	4556 Mar 21 10:00	1° $\Upsilon$ 38'14	-1°-33'00	evening set	4562 May 18 02:02	13° $\Pi$ 42'06	
minimum elong	4556 Mar 21 09:58	1° $\Upsilon$ 38'13	1°33'01				
max. Earth dist.	4556 Mar 21 11:10	1° $\Upsilon$ 38'35	10.87257 AU	conjunction	4562 Jun 04 11:24	15° $\Pi$ 52'19	-1°-51'-57
morning rise	4556 Apr 07 04:38	3° $\Upsilon$ 38'20		minimum elong	4562 Jun 04 11:26	15° $\Pi$ 52'19	1°51'58
retrograde	4556 Jul 19 14:59	10° $\Upsilon$ 58'39		max. Earth dist.	4562 Jun 04 13:16	15° $\Pi$ 52'54	10.39376 AU
opposition	4556 Sep 28 07:11	7° $\Upsilon$ 36'58	-2°-4'-55	morning rise	4562 Jun 22 00:58	18° $\Pi$ 03'52	
min. Earth dist.	4556 Sep 28 05:37	7° $\Upsilon$ 37'15	8.84537 AU	retrograde	4562 Oct 06 08:08	26° $\Pi$ 02'50	
direct	4556 Dec 06 16:07	4° $\Upsilon$ 18'01		opposition	4562 Dec 14 06:04	22° $\Pi$ 35'27	-2°-8'-26
evening set	4557 Mar 16 15:27	11° $\Upsilon$ 27'20		min. Earth dist.	4562 Dec 14 04:32	22° $\Pi$ 35'45	8.35195 AU
				direct	4563 Feb 19 07:29	19° $\Pi$ 12'04	
conjunction	4557 Apr 02 08:55	13° $\Upsilon$ 27'45	-1°-49'-31	evening set	4563 May 31 17:53	26° $\Pi$ 54'11	
minimum elong	4557 Apr 02 08:53	13° $\Upsilon$ 27'44	1°49'32				
max. Earth dist.	4557 Apr 02 10:26	13° $\Upsilon$ 28'12	10.81294 AU	conjunction	4563 Jun 18 07:52	29° $\Pi$ 06'52	-1°-34'-10
morning rise	4557 Apr 19 05:12	15° $\Upsilon$ 29'03		minimum elong	4563 Jun 18 07:55	29° $\Pi$ 06'53	1°34'11



max. Earth dist.	4563 Jun 18 08:32	29°II07'05	10.31049 AU	min. Earth dist.	4569 Mar 04 23:57	14°mp51'53	8.14635 AU
	4563 Jun 25 07:49	0°ϙ		direct	4569 May 11 13:02	11°mp22'53	
morning rise	4563 Jul 06 01:52	1°ϙ20'50		evening set	4569 Aug 24 23:06	19°mp30'52	
retrograde	4563 Oct 20 09:20	9°ϙ24'30					
opposition	4563 Dec 27 19:43	5°ϙ56'35	-1°-43'-4	conjunction	4569 Sep 11 23:43	21°mp48'40	1°15'11
min. Earth dist.	4563 Dec 27 19:00	5°ϙ56'43	8.27295 AU	minimum elong	4569 Sep 11 23:40	21°mp48'39	1°15'11
direct	4564 Mar 03 16:22	2°ϙ32'01		max. Earth dist.	4569 Sep 11 23:43	21°mp48'40	10.16319 AU
evening set	4564 Jun 13 17:41	10°ϙ20'50		morning rise	4569 Sep 29 22:16	24°mp05'51	
					4569 Nov 23 15:36	0°ϙ	
conjunction	4564 Jul 01 12:10	12°ϙ35'50	-1°-10'-59	retrograde	4570 Jan 11 02:41	2°ϙ04'20	
minimum elong	4564 Jul 01 12:12	12°ϙ35'51	1°11'00		4570 Mar 01 14:59	30°Rmp	
max. Earth dist.	4564 Jul 01 12:21	12°ϙ35'53	10.23783 AU	opposition	4570 Mar 18 20:17	28°mp38'09	1°48'20
morning rise	4564 Jul 19 10:09	14°ϙ51'55		min. Earth dist.	4570 Mar 18 20:31	28°mp38'06	8.18612 AU
retrograde	4564 Nov 02 12:14	22°ϙ58'56		direct	4570 May 25 18:13	25°mp09'03	
opposition	4565 Jan 09 12:45	19°ϙ30'42	-1°-11'-33		4570 Aug 12 00:39	0°ϙ	
min. Earth dist.	4565 Jan 09 12:26	19°ϙ30'46	8.20725 AU	evening set	4570 Sep 08 14:52	3°ϙ16'05	
direct	4565 Mar 17 08:31	16°ϙ04'58					
evening set	4565 Jun 28 01:06	23°ϙ59'59		conjunction	4570 Sep 26 12:36	5°ϙ32'21	1°37'53
				minimum elong	4570 Sep 26 12:33	5°ϙ32'20	1°37'54
conjunction	4565 Jul 15 23:29	26°ϙ16'55	0°-43'-31	max. Earth dist.	4570 Sep 26 11:46	5°ϙ32'05	10.21239 AU
minimum elong	4565 Jul 15 23:31	26°ϙ16'56	0°43'33	morning rise	4570 Oct 14 07:30	7°ϙ47'43	
max. Earth dist.	4565 Jul 15 23:39	26°ϙ16'59	10.18078 AU	retrograde	4571 Jan 24 18:45	15°ϙ40'18	
morning rise	4565 Aug 03 00:28	28°ϙ34'40		opposition	4571 Apr 01 13:39	12°ϙ15'07	2°12'59
	4565 Aug 14 13:25	0°ϙ		min. Earth dist.	4571 Apr 01 14:20	12°ϙ14'59	8.24468 AU
retrograde	4565 Nov 16 17:04	6°ϙ43'20		direct	4571 Jun 08 22:27	8°ϙ46'10	
opposition	4566 Jan 23 08:11	3°ϙ15'02	0°-35'-31	evening set	4571 Sep 23 01:05	16°ϙ50'25	
min. Earth dist.	4566 Jan 23 07:52	3°ϙ15'06	8.15934 AU				
	4566 Mar 16 14:45	30°Rϙ		conjunction	4571 Oct 10 19:17	19°ϙ04'43	1°54'52
direct	4566 Mar 31 04:44	29°ϙ48'12		minimum elong	4571 Oct 10 19:14	19°ϙ04'42	1°54'53
	4566 Apr 14 16:56	0°ϙ		max. Earth dist.	4571 Oct 10 17:54	19°ϙ04'17	10.27878 AU
evening set	4566 Jul 12 14:40	7°ϙ48'35		morning rise	4571 Oct 28 10:01	21°ϙ17'56	
				retrograde	4572 Feb 07 04:39	29°ϙ03'52	
conjunction	4566 Jul 30 15:51	10°ϙ06'52	0°-13'-20	opposition	4572 Apr 14 03:37	25°ϙ39'46	2°29'56
minimum elong	4566 Jul 30 15:52	10°ϙ06'52	0°13'21	min. Earth dist.	4572 Apr 14 04:08	25°ϙ39'40	8.31848 AU
behind sun begin	4566 Jul 30 11:50	10°ϙ05'35		direct	4572 Jun 22 00:19	22°ϙ11'15	
behind sun end	4566 Jul 30 19:54	10°ϙ08'10			4572 Oct 04 15:42	0°m.	
max. Earth dist.	4566 Jul 30 16:25	10°ϙ07'03	10.14312 AU	evening set	4572 Oct 06 03:59	0°m.11'09	
morning rise	4566 Aug 17 18:27	12°ϙ25'37					
	4566 Sep 07 23:58	15°ϙ		conjunction	4572 Oct 23 18:24	2°m.23'15	2°05'24
retrograde	4566 Nov 30 23:04	20°ϙ34'12		minimum elong	4572 Oct 23 18:23	2°m.23'14	2°05'25
asc. node	4567 Jan 09 02:16	19°ϙ14'07		max. Earth dist.	4572 Oct 23 17:10	2°m.22'51	10.35843 AU
opposition	4567 Feb 06 05:22	17°ϙ06'03	0°02'53	morning rise	4572 Nov 10 04:51	4°m.34'07	
min. Earth dist.	4567 Feb 06 04:34	17°ϙ06'13	8.13235 AU	retrograde	4573 Feb 19 08:25	12°m.13'05	
	4567 Mar 05 19:33	15°Rϙ		opposition	4573 Apr 27 13:51	8°m.50'06	2°38'36
direct	4567 Apr 14 04:47	13°ϙ38'19		min. Earth dist.	4573 Apr 27 14:02	8°m.50'04	8.40318 AU
	4567 May 23 04:15	15°ϙ		direct	4573 Jul 05 22:18	5°m.22'19	
evening set	4567 Jul 27 08:18	21°ϙ42'48		evening set	4573 Oct 19 22:27	13°m.16'33	
					4573 Nov 02 20:41	15°m.	
conjunction	4567 Aug 14 10:51	24°ϙ01'42	0°17'51				
minimum elong	4567 Aug 14 10:50	24°ϙ01'41	0°17'51	conjunction	4573 Nov 06 09:06	15°m.26'22	2°09'14
max. Earth dist.	4567 Aug 14 11:46	24°ϙ01'59	10.12725 AU	minimum elong	4573 Nov 06 09:05	15°m.26'22	2°09'14
morning rise	4567 Sep 01 13:29	26°ϙ20'40		max. Earth dist.	4573 Nov 06 08:19	15°m.26'07	10.44687 AU
	4567 Oct 02 10:48	0°mp		morning rise	4573 Nov 23 15:22	17°m.34'53	
retrograde	4567 Dec 15 03:55	4°mp27'27		retrograde	4574 Mar 04 08:23	25°m.06'52	
opposition	4568 Feb 20 03:11	0°mp59'44	0°41'16	opposition	4574 May 10 19:59	21°m.45'02	2°38'59
min. Earth dist.	4568 Feb 20 02:15	0°mp59'55	8.12796 AU	min. Earth dist.	4574 May 10 20:05	21°m.45'01	8.49425 AU
	4568 Mar 03 10:41	30°Rϙ		direct	4574 Jul 19 13:36	18°m.18'11	
direct	4568 Apr 27 07:55	27°ϙ31'17		evening set	4574 Nov 02 07:57	26°m.05'52	
	4568 Jun 19 22:50	0°mp					
evening set	4568 Aug 10 04:00	5°mp38'22		conjunction	4574 Nov 19 15:03	28°m.13'29	2°06'32
				minimum elong	4574 Nov 19 15:04	28°m.13'29	2°06'32
conjunction	4568 Aug 28 06:19	7°mp57'05	0°47'57	max. Earth dist.	4574 Nov 19 14:34	28°m.13'20	10.53955 AU
minimum elong	4568 Aug 28 06:16	7°mp57'05	0°47'58		4574 Dec 04 00:37	0°ϙ	
max. Earth dist.	4568 Aug 28 06:59	7°mp57'18	10.13415 AU	morning rise	4574 Dec 06 17:43	0°ϙ19'47	
morning rise	4568 Sep 15 07:33	10°mp15'31		retrograde	4575 Mar 17 01:59	7°ϙ45'05	
retrograde	4568 Dec 28 05:25	18°mp18'50		opposition	4575 May 23 21:57	4°ϙ24'20	2°31'35
opposition	4569 Mar 05 00:26	14°mp51'48	1°17'10	min. Earth dist.	4575 May 23 22:39	4°ϙ24'12	8.58720 AU



direct	4575 Aug 01 23:39	0°♂58'35		desc. node	4581 Aug 11 23:01	15°♂31'20	
evening set	4575 Nov 15 08:28	8°♂39'14			4581 Aug 19 04:32	15°♂	
				direct	4581 Oct 15 03:00	12°♂40'45	
conjunction	4575 Dec 02 12:21	10°♂44'47	1°57'47		4581 Dec 08 14:19	15°♂	
minimum elong	4575 Dec 02 12:23	10°♂44'48	1°57'47	evening set	4582 Jan 24 17:54	19°♂48'14	
max. Earth dist.	4575 Dec 02 11:17	10°♂44'28	10.63190 AU				
morning rise	4575 Dec 19 12:09	12°♂49'09		conjunction	4582 Feb 10 10:51	21°♂46'41	0°-12'-40
retrograde	4576 Mar 28 13:04	20°♂08'23		minimum elong	4582 Feb 10 10:50	21°♂46'41	0°12'41
opposition	4576 Jun 04 19:46	16°♂48'36	2°17'12	behind sun begin	4582 Feb 10 06:19	21°♂45'21	
min. Earth dist.	4576 Jun 04 20:56	16°♂48'23	8.67748 AU	behind sun end	4582 Feb 10 15:21	21°♂48'01	
direct	4576 Aug 14 05:28	13°♂24'00		max. Earth dist.	4582 Feb 10 09:48	21°♂46'23	10.97084 AU
evening set	4576 Nov 27 00:44	20°♂57'35		morning rise	4582 Feb 27 03:29	23°♂45'03	
					4582 May 06 22:28	0°♂	
conjunction	4576 Dec 14 01:49	23°♂01'17	1°43'45	retrograde	4582 Jun 08 07:50	0°♂51'18	
minimum elong	4576 Dec 14 01:51	23°♂01'18	1°43'45		4582 Jul 11 08:48	30°♂	
max. Earth dist.	4576 Dec 14 00:11	23°♂00'47	10.71953 AU	opposition	4582 Aug 17 17:55	27°♂32'45	0°-31'-14
morning rise	4576 Dec 30 23:21	25°♂03'55		min. Earth dist.	4582 Aug 17 18:13	27°♂32'41	8.97194 AU
	4577 Feb 16 05:30	0°♂		direct	4582 Oct 27 07:08	24°♂13'43	
retrograde	4577 Apr 09 21:20	2°♂17'59			4583 Jan 24 18:21	0°♂	
	4577 Jun 03 23:21	30°♂		evening set	4583 Feb 05 08:15	1°♂19'18	
opposition	4577 Jun 17 13:45	28°♂58'59	1°56'54				
min. Earth dist.	4577 Jun 17 14:39	28°♂58'49	8.76098 AU	conjunction	4583 Feb 22 00:39	3°♂17'37	0°-38'-13
direct	4577 Aug 27 05:48	25°♂35'35		minimum elong	4583 Feb 22 00:37	3°♂17'37	0°38'14
	4577 Nov 12 04:33	0°♂		max. Earth dist.	4583 Feb 22 00:13	3°♂17'30	10.96775 AU
evening set	4577 Dec 09 09:27	3°♂02'20		morning rise	4583 Mar 10 17:16	5°♂16'04	
				retrograde	4583 Jun 20 11:58	12°♂24'48	
conjunction	4577 Dec 26 08:17	5°♂04'27	1°25'19	opposition	4583 Aug 30 01:33	9°♂05'39	-1°-1'-49
minimum elong	4577 Dec 26 08:20	5°♂04'28	1°25'20	min. Earth dist.	4583 Aug 30 01:36	9°♂05'39	8.95885 AU
max. Earth dist.	4577 Dec 26 07:03	5°♂04'05	10.79859 AU	direct	4583 Nov 08 07:25	5°♂46'58	
morning rise	4578 Jan 12 03:59	7°♂05'38		evening set	4584 Feb 16 23:18	12°♂52'06	
retrograde	4578 Apr 22 02:04	14°♂15'35					
opposition	4578 Jun 30 04:25	10°♂57'09	1°31'52	conjunction	4584 Mar 04 15:21	14°♂50'35	-1°-2'-17
min. Earth dist.	4578 Jun 30 04:31	10°♂57'08	8.83419 AU	minimum elong	4584 Mar 04 15:19	14°♂50'35	1°02'18
direct	4578 Sep 08 23:44	7°♂34'56		max. Earth dist.	4584 Mar 04 14:42	14°♂50'24	10.94452 AU
evening set	4578 Dec 21 11:40	14°♂55'23		morning rise	4584 Mar 21 08:26	16°♂49'26	
				retrograde	4584 Jul 01 18:30	24°♂02'03	
conjunction	4579 Jan 07 08:42	16°♂56'11	1°03'27	opposition	4584 Sep 10 10:32	20°♂42'06	-1°-30'-2
minimum elong	4579 Jan 07 08:43	16°♂56'12	1°03'28	min. Earth dist.	4584 Sep 10 10:52	20°♂42'02	8.92627 AU
max. Earth dist.	4579 Jan 07 08:30	16°♂56'07	10.86575 AU	direct	4584 Nov 19 08:14	17°♂23'30	
morning rise	4579 Jan 24 02:58	18°♂56'13		evening set	4585 Feb 27 16:13	24°♂29'28	
retrograde	4579 May 04 05:00	26°♂03'16					
opposition	4579 Jul 12 16:19	22°♂45'10	1°03'18	conjunction	4585 Mar 16 08:17	26°♂28'29	-1°-23'-57
min. Earth dist.	4579 Jul 12 16:21	22°♂45'10	8.89409 AU	minimum elong	4585 Mar 16 08:15	26°♂28'28	1°23'58
direct	4579 Sep 21 13:00	19°♂24'00		max. Earth dist.	4585 Mar 16 06:53	26°♂28'04	10.90267 AU
evening set	4580 Jan 02 09:03	26°♂39'03		morning rise	4585 Apr 02 02:24	28°♂28'06	
					4585 Apr 15 11:17	0°♂	
conjunction	4580 Jan 19 04:26	28°♂38'47	0°39'11	retrograde	4585 Jul 14 04:42	5°♂45'42	
minimum elong	4580 Jan 19 04:27	28°♂38'48	0°39'11	opposition	4585 Sep 22 21:28	2°♂24'44	-1°-54'-49
max. Earth dist.	4580 Jan 19 04:04	28°♂38'41	10.91821 AU	min. Earth dist.	4585 Sep 22 22:14	2°♂24'35	8.87614 AU
	4580 Jan 30 12:50	0°♂			4585 Oct 28 23:13	30°♂	
morning rise	4580 Feb 04 21:46	0°♂37'57		direct	4585 Dec 01 09:52	29°♂05'59	
retrograde	4580 May 15 06:41	7°♂43'20			4586 Jan 03 04:47	0°♂	
opposition	4580 Jul 24 01:57	4°♂25'22	0°32'28	evening set	4586 Mar 11 12:22	6°♂14'02	
min. Earth dist.	4580 Jul 24 02:31	4°♂25'16	8.93826 AU				
direct	4580 Oct 02 20:58	1°♂05'05		conjunction	4586 Mar 28 05:12	8°♂13'54	-1°-42'-19
evening set	4581 Jan 13 02:45	8°♂15'46		minimum elong	4586 Mar 28 05:09	8°♂13'54	1°42'19
				max. Earth dist.	4586 Mar 28 04:13	8°♂13'37	10.84437 AU
conjunction	4581 Jan 29 20:41	10°♂14'43	0°13'30	morning rise	4586 Apr 14 00:45	10°♂14'37	
minimum elong	4581 Jan 29 20:42	10°♂14'44	0°13'31	retrograde	4586 Jul 26 18:16	17°♂38'08	
behind sun begin	4581 Jan 29 16:41	10°♂13'33		opposition	4586 Oct 05 10:40	14°♂15'59	-2°-15'-4
behind sun end	4581 Jan 30 00:43	10°♂15'54		min. Earth dist.	4586 Oct 05 11:01	14°♂15'55	8.81079 AU
max. Earth dist.	4581 Jan 29 19:37	10°♂14'25	10.95384 AU	direct	4586 Dec 13 13:44	10°♂56'51	
morning rise	4581 Feb 15 13:34	12°♂13'21		evening set	4587 Mar 23 12:53	18°♂08'08	
	4581 Mar 12 16:40	15°♂					
retrograde	4581 May 27 05:49	19°♂18'26		conjunction	4587 Apr 09 07:14	20°♂09'16	-1°-56'-31
opposition	4581 Aug 05 10:19	16°♂00'19	0°00'33	minimum elong	4587 Apr 09 07:12	20°♂09'15	1°56'32
min. Earth dist.	4581 Aug 05 11:09	16°♂00'09	8.96477 AU	max. Earth dist.	4587 Apr 09 07:19	20°♂09'17	10.77213 AU



morning rise	4587 Apr 26 04:41	22°♈11'22		retrograde	4593 Oct 27 09:30	17°♎01'47	
retrograde	4587 Aug 08 14:58	29°♈41'30		opposition	4594 Jan 03 15:30	13°♎33'01	-1°-26'-43
opposition	4587 Oct 18 02:59	26°♈18'07	-2°-29'-47	min. Earth dist.	4594 Jan 03 13:38	13°♎33'23	8.21533 AU
min. Earth dist.	4587 Oct 18 02:28	26°♈18'13	8.73290 AU	direct	4594 Mar 11 11:53	10°♎07'16	
direct	4587 Dec 25 20:42	22°♈58'25		evening set	4594 Jun 21 20:42	18°♎00'21	
	4588 Apr 01 20:06	0°♈					
evening set	4588 Apr 03 18:55	0°♈13'57		conjunction	4594 Jul 09 17:32	20°♎16'44	0°-56'-32
				minimum elong	4594 Jul 09 17:35	20°♎16'45	0°56'33
conjunction	4588 Apr 20 15:21	2°♈16'41	-2°-5'-46	max. Earth dist.	4594 Jul 09 19:23	20°♎17'19	10.18595 AU
minimum elong	4588 Apr 20 15:20	2°♈16'40	2°05'48	morning rise	4594 Jul 27 17:13	22°♎34'02	
max. Earth dist.	4588 Apr 20 16:08	2°♈16'55	10.68897 AU		4594 Oct 13 05:26	0°♏	
morning rise	4588 May 07 15:23	4°♈20'33		retrograde	4594 Nov 10 15:38	0°♏43'03	
retrograde	4588 Aug 20 17:19	11°♈57'43			4594 Dec 09 02:56	30°♏♌	
opposition	4588 Oct 29 22:59	8°♈33'05	-2°-38'-3	opposition	4595 Jan 17 10:20	27°♎14'13	0°-52'-26
min. Earth dist.	4588 Oct 29 21:54	8°♈33'18	8.64575 AU	min. Earth dist.	4595 Jan 17 08:42	27°♎14'33	8.16167 AU
direct	4589 Jan 06 05:19	5°♈12'38		direct	4595 Mar 25 04:45	23°♎47'27	
evening set	4589 Apr 16 07:34	12°♈33'23			4595 Jun 21 22:04	0°♏	
				evening set	4595 Jul 06 08:02	1°♏46'17	
conjunction	4589 May 03 06:49	14°♈38'01	-2°-9'-25	conjunction	4595 Jul 24 08:05	4°♏04'16	0°-27'-20
minimum elong	4589 May 03 06:49	14°♈38'01	2°09'27	minimum elong	4595 Jul 24 08:06	4°♏04'17	0°27'21
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morning rise	4589 May 20 10:15	16°♈43'58		retrograde	4595 Nov 24 22:37	14°♏32'33	
retrograde	4589 Sep 03 00:21	24°♈28'15		opposition	4596 Jan 31 07:29	11°♏03'58	0°-14'-45
opposition	4589 Nov 11 22:58	21°♈02'27	-2°-39'-5	min. Earth dist.	4596 Jan 31 06:17	11°♏04'12	8.12826 AU
min. Earth dist.	4589 Nov 11 22:10	21°♈02'36	8.55318 AU	direct	4596 Apr 07 03:46	7°♏36'21	
direct	4590 Jan 18 19:18	17°♈41'04		asc. node	4596 Jun 23 12:05	12°♏29'15	
evening set	4590 Apr 29 03:30	25°♈07'47			4596 Jul 14 17:02	15°♏	
				evening set	4596 Jul 20 00:30	15°♏39'52	
conjunction	4590 May 16 06:25	27°♈14'40	-2°-6'-57	conjunction	4596 Aug 07 02:33	17°♏58'46	0°03'44
minimum elong	4590 May 16 06:26	27°♈14'40	2°06'59	minimum elong	4596 Aug 07 02:32	17°♏58'46	0°03'44
max. Earth dist.	4590 May 16 06:45	27°♈14'46	10.50490 AU	behind sun begin	4596 Aug 06 19:15	17°♏56'27	
morning rise	4590 Jun 02 13:52	29°♈22'55		behind sun end	4596 Aug 07 09:48	18°♏01'05	
	4590 Jun 07 16:34	0°♏		max. Earth dist.	4596 Aug 07 03:25	17°♏59'01	10.11993 AU
retrograde	4590 Sep 16 12:53	7°♏14'04		morning rise	4596 Aug 25 05:33	20°♏17'58	
opposition	4590 Nov 25 03:06	3°♏47'13	-2°-32'-23	retrograde	4596 Dec 08 04:06	28°♏26'32	
min. Earth dist.	4590 Nov 25 02:31	3°♏47'20	8.45929 AU	opposition	4597 Feb 13 05:46	24°♏58'28	0°24'00
direct	4591 Jan 31 15:26	0°♏24'47		min. Earth dist.	4597 Feb 13 04:51	24°♏58'39	8.11733 AU
evening set	4591 May 12 07:23	7°♏57'59		direct	4597 Apr 21 07:13	21°♏30'13	
				evening set	4597 Aug 03 20:19	29°♏37'04	
conjunction	4591 May 29 14:38	10°♏07'19	-1°-58'-9		4597 Aug 06 20:52	0°♐	
minimum elong	4591 May 29 14:41	10°♏07'19	1°58'11	conjunction	4597 Aug 21 22:51	1°♐56'06	0°34'33
max. Earth dist.	4591 May 29 15:29	10°♏07'35	10.41217 AU	minimum elong	4597 Aug 21 22:50	1°♐56'06	0°34'33
morning rise	4591 Jun 16 02:21	12°♏18'01		max. Earth dist.	4597 Aug 21 23:42	1°♐56'22	10.12048 AU
retrograde	4591 Sep 30 07:19	20°♏15'25		morning rise	4597 Sep 09 01:10	4°♐15'04	
opposition	4591 Dec 08 11:20	16°♏47'43	-2°-17'-49	retrograde	4597 Dec 22 06:55	12°♐20'50	
min. Earth dist.	4591 Dec 08 10:31	16°♏47'53	8.36854 AU	opposition	4598 Feb 27 03:59	8°♐53'31	1°01'22
direct	4592 Feb 13 16:23	13°♏24'11		min. Earth dist.	4598 Feb 27 02:54	8°♐53'45	8.12960 AU
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				evening set	4598 Aug 18 16:44	13°♐33'21	
conjunction	4592 Jun 11 07:37	23°♏15'58	-1°-43'-5	conjunction	4598 Sep 05 18:18	15°♐51'46	1°03'20
minimum elong	4592 Jun 11 07:39	23°♏15'59	1°43'07	minimum elong	4598 Sep 05 18:15	15°♐51'45	1°03'20
max. Earth dist.	4592 Jun 11 09:26	23°♏16'32	10.32504 AU	max. Earth dist.	4598 Sep 05 19:23	15°♐52'07	10.14389 AU
morning rise	4592 Jun 28 23:40	25°♏29'07		morning rise	4598 Sep 23 18:22	18°♐09'44	
	4592 Aug 07 23:20	0°♑		retrograde	4599 Jan 05 06:49	26°♐11'10	
retrograde	4592 Oct 13 06:29	3°♑31'48		opposition	4599 Mar 13 01:19	22°♐44'48	1°34'57
opposition	4592 Dec 20 23:36	0°♑03'25	-1°-55'-38	min. Earth dist.	4599 Mar 12 23:56	22°♐45'05	8.16427 AU
min. Earth dist.	4592 Dec 20 22:01	0°♑03'44	8.28570 AU	direct	4599 May 19 18:27	19°♐16'05	
	4592 Dec 21 16:37	30°♏♐		evening set	4599 Sep 02 10:55	27°♐24'12	
direct	4593 Feb 25 23:20	26°♏38'46					
	4593 Apr 29 18:00	0°♑		conjunction	4599 Sep 20 10:12	29°♐41'18	1°28'15
evening set	4593 Jun 07 16:07	4°♑25'27		minimum elong	4599 Sep 20 10:09	29°♐41'17	1°28'16
				max. Earth dist.	4599 Sep 20 11:32	29°♐41'44	10.18868 AU
conjunction	4593 Jun 25 08:50	6°♑39'43	-1°-22'-14				
minimum elong	4593 Jun 25 08:53	6°♑39'44	1°22'15				
max. Earth dist.	4593 Jun 25 10:58	6°♑40'24	10.24818 AU				
morning rise	4593 Jul 13 05:03	8°♑55'08					





























































































































	4599 Sep 22 20:34	0° <u>♄</u>	
morning rise	4599 Oct 08 06:52	1° <u>♄</u> 57'37	
retrograde	4600 Jan 19 03:13	9° <u>♄</u> 53'27	
opposition	4600 Mar 26 20:33	6° <u>♄</u> 28'08	2°02'42
min. Earth dist.	4600 Mar 26 19:11	6° <u>♄</u> 28'24	8.21901 AU
direct	4600 Jun 02 23:17	2° <u>♄</u> 59'32	
evening set	4600 Sep 17 00:42	11° <u>♄</u> 05'29	
conjunction	4600 Oct 04 20:44	13° <u>♄</u> 20'45	1°47'56
minimum elong	4600 Oct 04 20:41	13° <u>♄</u> 20'44	1°47'56
max. Earth dist.	4600 Oct 04 21:49	13° <u>♄</u> 21'06	10.25178 AU
morning rise	4600 Oct 22 13:17	15° <u>♄</u> 34'58	



retrograde	4600 Jan 19 03:13	9°♂53'27		conjunction	4605 Dec 10 00:42	17°♂57'18	1°50'18
opposition	4600 Mar 26 20:33	6°♂28'08	2°02'42	minimum elong	4605 Dec 10 00:44	17°♂57'19	1°50'19
min. Earth dist.	4600 Mar 26 19:11	6°♂28'24	8.21901 AU	max. Earth dist.	4605 Dec 09 22:55	17°♂56'45	10.67751 AU
direct	4600 Jun 02 23:17	2°♂59'32		morning rise	4605 Dec 26 23:06	20°♂00'45	
evening set	4600 Sep 17 00:42	11°♂05'29		retrograde	4606 Apr 06 00:15	27°♂17'35	
				opposition	4606 Jun 13 10:15	23°♂58'21	2°06'13
conjunction	4600 Oct 04 20:44	13°♂20'45	1°47'56	min. Earth dist.	4606 Jun 13 11:46	23°♂58'04	8.71848 AU
minimum elong	4600 Oct 04 20:41	13°♂20'44	1°47'56	direct	4606 Aug 22 22:49	20°♂34'28	
max. Earth dist.	4600 Oct 04 21:49	13°♂21'06	10.25178 AU	evening set	4606 Dec 05 10:55	28°♂04'47	
morning rise	4600 Oct 22 13:17	15°♂34'58			4606 Dec 21 09:19	0°♂	
retrograde	4601 Feb 01 17:04	23°♂24'11					
opposition	4601 Apr 09 12:37	20°♂00'01	2°23'12	conjunction	4606 Dec 22 10:53	0°♂07'46	1°33'39
min. Earth dist.	4601 Apr 09 12:08	20°♂00'06	8.28996 AU	minimum elong	4606 Dec 22 10:55	0°♂07'46	1°33'40
direct	4601 Jun 17 02:28	16°♂31'46		max. Earth dist.	4606 Dec 22 08:53	0°♂07'09	10.75573 AU
evening set	4601 Oct 01 07:48	24°♂33'51		morning rise	4607 Jan 08 07:18	2°♂09'42	
				retrograde	4607 Apr 18 06:00	9°♂21'59	
conjunction	4601 Oct 19 00:00	26°♂46'55	2°01'24	opposition	4607 Jun 26 02:58	6°♂03'15	1°43'04
minimum elong	4601 Oct 18 23:58	26°♂46'55	2°01'24	min. Earth dist.	4607 Jun 26 05:02	6°♂02'52	8.79168 AU
max. Earth dist.	4601 Oct 18 23:56	26°♂46'54	10.32875 AU	direct	4607 Sep 04 19:34	2°♂40'20	
morning rise	4601 Nov 05 12:13	28°♂58'49		evening set	4607 Dec 17 16:36	10°♂04'14	
	4601 Nov 13 20:37	0°♂					
retrograde	4602 Feb 15 00:12	6°♂40'58		conjunction	4608 Jan 03 14:26	12°♂05'47	1°13'08
opposition	4602 Apr 23 01:07	3°♂17'57	2°35'34	minimum elong	4608 Jan 03 14:28	12°♂05'47	1°13'09
min. Earth dist.	4602 Apr 23 01:49	3°♂17'48	8.37206 AU	max. Earth dist.	4608 Jan 03 11:49	12°♂04'59	10.82367 AU
	4602 Jun 17 10:38	30°♂		morning rise	4608 Jan 20 09:28	14°♂06'30	
direct	4602 Jul 01 02:36	29°♂50'16		retrograde	4608 Apr 29 08:58	21°♂15'23	
	4602 Jul 14 18:42	0°♂		opposition	4608 Jul 07 16:35	17°♂56'54	1°15'51
evening set	4602 Oct 15 06:33	7°♂47'08		min. Earth dist.	4608 Jul 07 18:34	17°♂56'32	8.85313 AU
				direct	4608 Sep 16 13:02	14°♂34'53	
conjunction	4602 Nov 01 18:46	9°♂57'56	2°08'12	evening set	4608 Dec 28 16:29	21°♂53'04	
minimum elong	4602 Nov 01 18:45	9°♂57'55	2°08'12				
max. Earth dist.	4602 Nov 01 17:10	9°♂57'26	10.41420 AU	conjunction	4609 Jan 14 12:35	23°♂53'27	0°49'44
morning rise	4602 Nov 19 02:53	12°♂07'27		minimum elong	4609 Jan 14 12:36	23°♂53'28	0°49'45
	4602 Dec 13 17:10	15°♂		max. Earth dist.	4609 Jan 14 10:21	23°♂52'47	10.87852 AU
retrograde	4603 Feb 28 01:41	19°♂42'35		morning rise	4609 Jan 31 06:32	25°♂53'13	
opposition	4603 May 06 09:30	16°♂20'42	2°39'34		4609 Mar 10 22:23	0°♂	
min. Earth dist.	4603 May 06 10:57	16°♂20'25	8.45991 AU	retrograde	4609 May 11 11:38	2°♂59'58	
	4603 May 23 22:30	15°♂			4609 Jul 16 00:35	30°♂	
direct	4603 Jul 14 21:45	12°♂53'49		opposition	4609 Jul 20 03:40	29°♂41'31	0°45'47
	4603 Sep 03 18:35	15°♂		min. Earth dist.	4609 Jul 20 04:42	29°♂41'19	8.90042 AU
evening set	4603 Oct 28 20:34	20°♂44'37		direct	4609 Sep 29 00:43	26°♂20'21	
					4609 Dec 07 14:34	0°♂	
conjunction	4603 Nov 15 05:05	22°♂53'11	2°08'19	evening set	4610 Jan 09 11:56	3°♂33'41	
minimum elong	4603 Nov 15 05:06	22°♂53'11	2°08'19				
max. Earth dist.	4603 Nov 15 02:34	22°♂52'24	10.50326 AU	conjunction	4610 Jan 26 06:43	5°♂33'13	0°24'30
morning rise	4603 Dec 02 09:30	25°♂00'30		minimum elong	4610 Jan 26 06:44	5°♂33'13	0°24'30
	4604 Jan 17 20:39	0°♂		max. Earth dist.	4610 Jan 26 05:41	5°♂32'55	10.91818 AU
retrograde	4604 Mar 11 21:14	2°♂28'55		morning rise	4610 Feb 11 23:51	7°♂32'19	
	4604 May 07 08:05	30°♂		retrograde	4610 May 23 12:34	14°♂38'15	
opposition	4604 May 18 13:36	29°♂08'04	2°35'31	opposition	4610 Aug 01 12:57	11°♂19'38	0°14'08
min. Earth dist.	4604 May 18 15:04	29°♂07'47	8.54926 AU	min. Earth dist.	4610 Aug 01 13:17	11°♂19'34	8.93186 AU
direct	4604 Jul 27 12:06	25°♂42'08		direct	4610 Oct 11 07:32	7°♂59'11	
	4604 Oct 10 16:15	0°♂		desc. node	4611 Jan 14 14:11	14°♂23'10	
evening set	4604 Nov 10 01:44	3°♂26'18			4611 Jan 19 22:01	15°♂	
				evening set	4611 Jan 21 04:25	15°♂08'51	
conjunction	4604 Nov 27 07:02	5°♂32'48	2°02'08				
minimum elong	4604 Nov 27 07:03	5°♂32'49	2°02'09	conjunction	4611 Feb 06 22:01	17°♂07'47	0°-1'-39
max. Earth dist.	4604 Nov 27 04:38	5°♂32'04	10.59221 AU	minimum elong	4611 Feb 06 22:03	17°♂07'47	0°01'40
morning rise	4604 Dec 14 08:10	7°♂38'04		behind sun begin	4611 Feb 06 15:03	17°♂05'44	
retrograde	4605 Mar 24 12:21	15°♂00'20		behind sun end	4611 Feb 07 05:03	17°♂09'51	
opposition	4605 May 31 13:49	11°♂40'23	2°24'04	max. Earth dist.	4611 Feb 06 21:31	17°♂07'40	10.94122 AU
min. Earth dist.	4605 May 31 15:02	11°♂40'09	8.63658 AU	morning rise	4611 Feb 23 14:47	19°♂06'30	
direct	4605 Aug 09 20:56	8°♂15'28		retrograde	4611 Jun 04 14:46	26°♂13'00	
evening set	4605 Nov 22 22:14	15°♂52'41		opposition	4611 Aug 13 21:15	22°♂54'03	0°-17'-55
				min. Earth dist.	4611 Aug 13 21:43	22°♂53'58	8.94624 AU



direct	4611 Oct 23 11:55	19°  34'12		conjunction	4618 Apr 29 07:32	9°  41'03	-2°-8'-29
evening set	4612 Feb 01 19:31	26°  41'25		minimum elong	4618 Apr 29 07:32	9°  41'03	2°08'31
				max. Earth dist.	4618 Apr 29 09:44	9°  41'44	10.64534 AU
conjunction	4612 Feb 18 12:09	28°  40'03	0°-27'-35	morning rise	4618 May 16 09:26	11°  46'00	
minimum elong	4612 Feb 18 12:08	28°  40'02	0°27'36		4618 Jun 13 22:26	15°  8	
max. Earth dist.	4612 Feb 18 11:03	28°  39'43	10.94672 AU	retrograde	4618 Aug 29 17:30	19°  827'00	
	4612 Feb 29 17:09	0°  8		opposition	4618 Nov 07 20:26	16°  802'03	-2°-39'-21
morning rise	4612 Mar 06 04:55	0°  38'42		min. Earth dist.	4618 Nov 07 18:22	16°  802'27	8.60395 AU
retrograde	4612 Jun 15 16:43	7°  47'04			4618 Nov 21 10:39	15°  R8	
opposition	4612 Aug 25 05:19	4°  27'37	0°-49'-13	direct	4619 Jan 14 21:36	12°  841'30	
min. Earth dist.	4612 Aug 25 05:52	4°  27'31	8.94299 AU		4619 Mar 08 02:06	15°  8	
direct	4612 Nov 03 13:26	1°  8'13		evening set	4619 Apr 25 02:23	20°  805'16	
evening set	4613 Feb 12 10:25	8°  14'17					
				conjunction	4619 May 12 03:42	22°  811'02	-2°-8'-35
conjunction	4613 Mar 01 02:34	10°  12'54	0°-52'-26	minimum elong	4619 May 12 03:43	22°  811'02	2°08'37
minimum elong	4613 Mar 01 02:32	10°  12'53	0°52'27	max. Earth dist.	4619 May 12 06:39	22°  811'56	10.55897 AU
max. Earth dist.	4613 Mar 01 01:56	10°  12'43	10.93449 AU	morning rise	4619 May 29 09:08	24°  818'06	
morning rise	4613 Mar 17 19:38	12°  11'47			4619 Jul 23 05:54	0°  II	
retrograde	4613 Jun 27 21:27	19°  23'23		retrograde	4619 Sep 12 04:39	2°  II05'50	
opposition	4613 Sep 06 14:05	16°  03'14	-1°-18'-36		4619 Nov 03 09:27	30°  R8	
min. Earth dist.	4613 Sep 06 13:51	16°  03'16	8.92221 AU	opposition	4619 Nov 20 22:40	28°  839'55	-2°-35'-53
direct	4613 Nov 15 16:17	12°  14'06		min. Earth dist.	4619 Nov 20 20:03	28°  840'26	8.51627 AU
evening set	4614 Feb 24 02:29	19°  15'016		direct	4620 Jan 27 14:41	25°  818'34	
					4620 Apr 13 00:20	0°  II	
conjunction	4614 Mar 12 18:40	21°  49'14	-1°-15'-14	evening set	4620 May 07 02:39	2°  II48'15	
minimum elong	4614 Mar 12 18:38	21°  49'13	1°15'15				
max. Earth dist.	4614 Mar 12 19:19	21°  49'26	10.90488 AU	conjunction	4620 May 24 07:54	4°  II56'16	-2°-2'-26
morning rise	4614 Mar 29 12:20	23°  48'40		minimum elong	4620 May 24 07:56	4°  II56'17	2°02'28
	4614 Jun 03 17:32	0°  Y		max. Earth dist.	4620 May 24 10:42	4°  II57'09	10.47109 AU
retrograde	4614 Jul 10 07:29	1°  Y04'38		morning rise	4620 Jun 10 17:29	7°  II05'40	
	4614 Aug 16 13:46	30°  R8		retrograde	4620 Sep 24 21:43	14°  II59'38	
opposition	4614 Sep 19 00:13	27°  43'39	-1°-44'-58	opposition	4620 Dec 03 05:01	11°  II32'53	-2°-24'-35
min. Earth dist.	4614 Sep 18 22:56	27°  43'53	8.88451 AU	min. Earth dist.	4620 Dec 03 02:37	11°  II33'21	8.42886 AU
direct	4614 Nov 27 17:34	24°  24'38		direct	4621 Feb 08 11:48	8°  II10'30	
	4615 Feb 22 12:34	0°  Y		evening set	4621 May 20 11:03	15°  II46'31	
evening set	4615 Mar 07 21:22	1°  Y32'10					
				conjunction	4621 Jun 06 20:44	17°  II56'57	-1°-49'-59
conjunction	4615 Mar 24 13:59	3°  Y31'47	-1°-35'-5	minimum elong	4621 Jun 06 20:47	17°  II56'58	1°50'01
minimum elong	4615 Mar 24 13:56	3°  Y31'46	1°35'05	max. Earth dist.	4621 Jun 06 22:34	17°  II57'31	10.38548 AU
max. Earth dist.	4615 Mar 24 15:09	3°  Y32'08	10.85893 AU	morning rise	4621 Jun 24 10:49	20°  II08'45	
morning rise	4615 Apr 10 08:45	5°  Y32'06		retrograde	4621 Oct 08 17:52	28°  II08'06	
retrograde	4615 Jul 22 20:26	12°  Y53'23		opposition	4621 Dec 16 15:07	24°  II40'39	-2°-5'-34
opposition	4615 Oct 01 12:25	9°  Y31'30	-2°-7'-13	min. Earth dist.	4621 Dec 16 13:41	24°  II40'57	8.34539 AU
min. Earth dist.	4615 Oct 01 10:56	9°  Y31'46	8.83134 AU	direct	4622 Feb 21 16:20	21°  II17'09	
direct	4615 Dec 09 19:02	6°  Y12'23		evening set	4622 Jun 03 03:32	28°  II59'45	
evening set	4616 Mar 18 20:10	13°  Y22'31			4622 Jun 11 04:19	0°  ☾	
conjunction	4616 Apr 04 13:41	15°  Y23'08	-1°-51'-6	conjunction	4622 Jun 20 17:55	1°  ☾12'37	-1°-31'-32
minimum elong	4616 Apr 04 13:39	15°  Y23'08	1°51'07	minimum elong	4622 Jun 20 17:58	1°  ☾12'37	1°31'34
max. Earth dist.	4616 Apr 04 14:33	15°  Y23'24	10.79858 AU	max. Earth dist.	4622 Jun 20 18:53	1°  ☾12'55	10.30572 AU
morning rise	4616 Apr 21 10:15	17°  Y24'40		morning rise	4622 Jul 08 12:22	3°  ☾26'43	
retrograde	4616 Aug 03 14:10	24°  Y52'06		retrograde	4622 Oct 22 17:53	11°  ☾30'29	
opposition	4616 Oct 13 03:42	21°  Y29'13	-2°-24'-18	opposition	4622 Dec 30 04:54	8°  ☾02'34	-1°-39'-27
min. Earth dist.	4616 Oct 13 02:25	21°  Y29'28	8.76492 AU	min. Earth dist.	4622 Dec 30 04:10	8°  ☾02'43	8.26979 AU
direct	4616 Dec 21 00:28	18°  Y09'49		direct	4623 Mar 07 02:40	4°  ☾37'55	
evening set	4617 Mar 30 23:47	25°  Y23'35		evening set	4623 Jun 17 03:48	12°  ☾27'01	
conjunction	4617 Apr 16 19:04	27°  Y25'34	-2°-2'-28	conjunction	4623 Jul 04 22:41	14°  ☾42'09	-1°-7'-49
minimum elong	4617 Apr 16 19:03	27°  Y25'34	2°02'29	minimum elong	4623 Jul 04 22:43	14°  ☾42'10	1°07'51
max. Earth dist.	4617 Apr 16 20:10	27°  Y25'54	10.72638 AU	max. Earth dist.	4623 Jul 04 23:39	14°  ☾42'28	10.23619 AU
morning rise	4617 May 03 18:03	29°  Y28'40		morning rise	4623 Jul 22 20:54	16°  ☾58'19	
	4617 May 08 03:50	0°  8		retrograde	4623 Nov 05 21:25	25°  ☾05'13	
retrograde	4617 Aug 16 13:09	7°  802'46		opposition	4624 Jan 12 21:52	21°  ☾37'01	-1°-7'-22
opposition	4617 Oct 25 22:19	3°  838'52	-2°-35'-18	min. Earth dist.	4624 Jan 12 21:01	21°  ☾37'12	8.20704 AU
min. Earth dist.	4617 Oct 25 20:57	3°  839'08	8.68804 AU	direct	4624 Mar 19 17:40	18°  ☾11'16	
direct	4618 Jan 02 08:43	0°  818'58		evening set	4624 Jun 30 11:26	26°  ☾06'26	
evening set	4618 Apr 12 09:35	7°  837'21					



conjunction	4624 Jul 18 10:08	28° $\overline{5}$ 23'25	0°-40'-1	min. Earth dist.	4630 Apr 03 21:01	14° $\overline{5}$ 16'00	8.25552 AU
minimum elong	4624 Jul 18 10:09	28° $\overline{5}$ 23'26	0°40'02	direct	4630 Jun 11 07:37	10° $\overline{5}$ 47'16	
max. Earth dist.	4624 Jul 18 11:21	28° $\overline{5}$ 23'49	10.18193 AU	evening set	4630 Sep 25 08:57	18° $\overline{5}$ 50'52	
	4624 Jul 31 00:33	0° $\overline{9}$					
morning rise	4624 Aug 05 11:09	0° $\overline{9}$ 41'11		conjunction	4630 Oct 13 02:52	21° $\overline{5}$ 04'54	1°56'16
retrograde	4624 Nov 19 03:18	8° $\overline{9}$ 49'34		minimum elong	4630 Oct 13 02:50	21° $\overline{5}$ 04'53	1°56'17
opposition	4625 Jan 25 17:12	5° $\overline{9}$ 21'19	0°-31'-2	max. Earth dist.	4630 Oct 13 01:41	21° $\overline{5}$ 04'31	10.28969 AU
min. Earth dist.	4625 Jan 25 16:05	5° $\overline{9}$ 21'33	8.16181 AU	morning rise	4630 Oct 30 17:11	23° $\overline{5}$ 17'50	
direct	4625 Apr 02 13:42	1° $\overline{9}$ 54'32			4631 Jan 06 08:07	0° $\overline{9}$	
evening set	4625 Jul 15 01:04	9° $\overline{9}$ 54'54		retrograde	4631 Feb 09 09:50	1° $\overline{9}$ 02'58	
					4631 Mar 15 23:57	30° $\overline{9}$	
conjunction	4625 Aug 02 02:24	12° $\overline{9}$ 13'10	0°-9'-42	opposition	4631 Apr 17 10:01	27° $\overline{9}$ 39'00	2°31'10
minimum elong	4625 Aug 02 02:24	12° $\overline{9}$ 13'10	0°09'43	min. Earth dist.	4631 Apr 17 10:07	27° $\overline{9}$ 38'59	8.32931 AU
behind sun begin	4625 Aug 01 20:26	12° $\overline{9}$ 11'16		direct	4631 Jun 25 08:19	24° $\overline{9}$ 10'37	
behind sun end	4625 Aug 02 08:23	12° $\overline{9}$ 15'04			4631 Sep 21 07:55	0° $\overline{9}$	
max. Earth dist.	4625 Aug 02 03:42	12° $\overline{9}$ 13'34	10.14682 AU	evening set	4631 Oct 09 10:46	2° $\overline{9}$ 09'44	
morning rise	4625 Aug 20 04:55	14° $\overline{9}$ 31'51					
	4625 Aug 23 22:56	15° $\overline{9}$		conjunction	4631 Oct 27 00:57	4° $\overline{9}$ 21'35	2°06'02
asc. node	4625 Nov 28 03:01	22° $\overline{9}$ 38'27		minimum elong	4631 Oct 27 00:56	4° $\overline{9}$ 21'35	2°06'02
retrograde	4625 Dec 03 08:43	22° $\overline{9}$ 39'58		max. Earth dist.	4631 Oct 27 00:15	4° $\overline{9}$ 21'22	10.36904 AU
opposition	4626 Feb 08 14:09	19° $\overline{9}$ 11'57	0°07'24	morning rise	4631 Nov 13 10:57	6° $\overline{9}$ 32'12	
min. Earth dist.	4626 Feb 08 12:59	19° $\overline{9}$ 12'11	8.13724 AU	retrograde	4632 Feb 22 14:59	14° $\overline{9}$ 10'24	
direct	4626 Apr 16 14:01	15° $\overline{9}$ 44'16		opposition	4632 Apr 29 19:41	10° $\overline{9}$ 47'31	2°38'53
evening set	4626 Jul 29 18:46	23° $\overline{9}$ 48'38		min. Earth dist.	4632 Apr 29 20:02	10° $\overline{9}$ 47'27	8.41341 AU
				direct	4632 Jul 08 03:31	7° $\overline{9}$ 19'49	
conjunction	4626 Aug 16 21:12	26° $\overline{9}$ 07'25	0°21'24		4632 Oct 20 08:49	15° $\overline{9}$	
minimum elong	4626 Aug 16 21:11	26° $\overline{9}$ 07'24	0°21'25	evening set	4632 Oct 22 04:21	15° $\overline{9}$ 13'16	
max. Earth dist.	4626 Aug 16 22:05	26° $\overline{9}$ 07'42	10.13322 AU				
morning rise	4626 Sep 03 23:40	28° $\overline{9}$ 26'15		conjunction	4632 Nov 08 14:44	17° $\overline{9}$ 22'52	2°09'07
	4626 Sep 16 15:29	0° $\overline{9}$		minimum elong	4632 Nov 08 14:44	17° $\overline{9}$ 22'52	2°09'07
retrograde	4626 Dec 17 12:31	6° $\overline{9}$ 32'25		max. Earth dist.	4632 Nov 08 13:53	17° $\overline{9}$ 22'36	10.45657 AU
opposition	4627 Feb 22 11:39	3° $\overline{9}$ 04'52	0°45'32	morning rise	4632 Nov 25 20:41	19° $\overline{9}$ 31'10	
min. Earth dist.	4627 Feb 22 11:01	3° $\overline{9}$ 05'00	8.13498 AU	retrograde	4633 Mar 06 13:04	27° $\overline{9}$ 02'25	
	4627 Apr 09 23:40	30° $\overline{9}$		opposition	4633 May 13 01:14	23° $\overline{9}$ 40'39	2°38'22
direct	4627 Apr 30 17:02	29° $\overline{9}$ 36'29		min. Earth dist.	4633 May 13 02:13	23° $\overline{9}$ 40'28	8.50331 AU
	4627 May 21 10:31	0° $\overline{9}$		direct	4633 Jul 21 18:57	20° $\overline{9}$ 13'50	
evening set	4627 Aug 13 14:06	7° $\overline{9}$ 43'19		evening set	4633 Nov 04 13:02	28° $\overline{9}$ 00'49	
					4633 Nov 20 17:13	0° $\overline{9}$	
conjunction	4627 Aug 31 16:07	10° $\overline{9}$ 01'51	0°51'13				
minimum elong	4627 Aug 31 16:05	10° $\overline{9}$ 01'50	0°51'13	conjunction	4633 Nov 21 19:49	0° $\overline{9}$ 08'14	2°05'42
max. Earth dist.	4627 Aug 31 16:10	10° $\overline{9}$ 01'52	10.14208 AU	minimum elong	4633 Nov 21 19:50	0° $\overline{9}$ 08'14	2°05'42
morning rise	4627 Sep 18 17:08	12° $\overline{9}$ 20'05		max. Earth dist.	4633 Nov 21 18:22	0° $\overline{9}$ 07'47	10.54780 AU
retrograde	4627 Dec 31 13:34	20° $\overline{9}$ 22'41		morning rise	4633 Dec 08 22:20	2° $\overline{9}$ 14'23	
opposition	4628 Mar 07 08:33	16° $\overline{9}$ 55'49	1°20'55	retrograde	4634 Mar 19 04:45	9° $\overline{9}$ 39'03	
min. Earth dist.	4628 Mar 07 08:38	16° $\overline{9}$ 55'49	8.15518 AU	opposition	4634 May 26 02:47	6° $\overline{9}$ 18'21	2°30'09
direct	4628 May 13 21:20	13° $\overline{9}$ 27'00		min. Earth dist.	4634 May 26 04:15	6° $\overline{9}$ 18'04	8.59458 AU
evening set	4628 Aug 27 08:32	21° $\overline{9}$ 34'33		direct	4634 Aug 04 06:13	2° $\overline{9}$ 52'36	
				evening set	4634 Nov 17 12:43	10° $\overline{9}$ 32'37	
conjunction	4628 Sep 14 08:47	23° $\overline{9}$ 52'08	1°17'56				
minimum elong	4628 Sep 14 08:44	23° $\overline{9}$ 52'07	1°17'57	conjunction	4634 Dec 04 16:20	12° $\overline{9}$ 38'00	1°56'20
max. Earth dist.	4628 Sep 14 08:01	23° $\overline{9}$ 51'53	10.17271 AU	minimum elong	4634 Dec 04 16:22	12° $\overline{9}$ 38'01	1°56'20
morning rise	4628 Oct 02 07:05	26° $\overline{9}$ 09'04		max. Earth dist.	4634 Dec 04 14:15	12° $\overline{9}$ 37'22	10.63830 AU
	4628 Nov 04 04:26	0° $\overline{9}$		morning rise	4634 Dec 21 16:05	14° $\overline{9}$ 42'13	
retrograde	4629 Jan 13 10:19	4° $\overline{9}$ 06'46		retrograde	4635 Mar 31 16:40	22° $\overline{9}$ 01'02	
opposition	4629 Mar 21 03:52	0° $\overline{9}$ 40'46	1°51'22	opposition	4635 Jun 08 00:11	18° $\overline{9}$ 41'14	2°15'03
min. Earth dist.	4629 Mar 21 04:23	0° $\overline{9}$ 40'40	8.19627 AU	min. Earth dist.	4635 Jun 08 01:21	18° $\overline{9}$ 41'00	8.68281 AU
	4629 Mar 29 13:18	30° $\overline{9}$		direct	4635 Aug 17 11:14	15° $\overline{9}$ 16'38	
direct	4629 May 28 03:03	27° $\overline{9}$ 11'47		evening set	4635 Nov 30 04:17	22° $\overline{9}$ 49'39	
	4629 Jul 25 01:43	0° $\overline{9}$					
evening set	4629 Sep 10 23:37	5° $\overline{9}$ 18'15		conjunction	4635 Dec 17 05:18	24° $\overline{9}$ 53'16	1°41'46
				minimum elong	4635 Dec 17 05:21	24° $\overline{9}$ 53'17	1°41'46
conjunction	4629 Sep 28 21:01	7° $\overline{9}$ 34'16	1°40'01	max. Earth dist.	4635 Dec 17 03:34	24° $\overline{9}$ 52'44	10.72377 AU
minimum elong	4629 Sep 28 20:58	7° $\overline{9}$ 34'15	1°40'01	morning rise	4636 Jan 03 02:45	26° $\overline{9}$ 55'49	
max. Earth dist.	4629 Sep 28 19:44	7° $\overline{9}$ 33'51	10.22294 AU		4636 Jan 30 10:34	0° $\overline{9}$	
morning rise	4629 Oct 16 15:35	9° $\overline{9}$ 49'22		retrograde	4636 Apr 12 00:29	4° $\overline{9}$ 09'35	
retrograde	4630 Jan 27 00:22	17° $\overline{9}$ 41'07		opposition	4636 Jun 19 17:45	0° $\overline{9}$ 50'32	1°54'10
opposition	4630 Apr 03 20:33	14° $\overline{9}$ 16'06	2°15'09	min. Earth dist.	4636 Jun 19 18:23	0° $\overline{9}$ 50'25	8.76397 AU



	4636 Jun 30 22:43	30°R♄		conjunction	4642 Feb 24 04:23	5°♄10'34	0°-41'-11
direct	4636 Aug 29 09:58	27°♄27'08		minimum elong	4642 Feb 24 04:22	5°♄10'33	0°41'12
	4636 Oct 25 14:03	0°♄		max. Earth dist.	4642 Feb 24 04:09	5°♄10'30	10.95984 AU
evening set	4636 Dec 11 12:36	4°♄53'29		morning rise	4642 Mar 12 21:03	7°♄09'07	
				retrograde	4642 Jun 22 17:33	14°♄18'34	
conjunction	4636 Dec 28 11:28	6°♄55'33	1°22'53	opposition	4642 Sep 01 06:55	10°♄59'19	-1°-5'-21
minimum elong	4636 Dec 28 11:30	6°♄55'34	1°22'54	min. Earth dist.	4642 Sep 01 07:08	10°♄59'17	8.95066 AU
max. Earth dist.	4636 Dec 28 10:33	6°♄55'17	10.80038 AU	direct	4642 Nov 10 11:39	7°♄40'37	
morning rise	4637 Jan 14 07:01	8°♄56'42		evening set	4643 Feb 19 03:34	14°♄46'11	
retrograde	4637 Apr 24 05:56	16°♄06'33					
opposition	4637 Jul 02 08:21	12°♄48'03	1°28'39	conjunction	4643 Mar 07 19:32	16°♄44'48	-1°-5'-1
min. Earth dist.	4637 Jul 02 08:46	12°♄47'59	8.83465 AU	minimum elong	4643 Mar 07 19:30	16°♄44'47	1°05'02
direct	4637 Sep 11 03:57	9°♄25'49		max. Earth dist.	4643 Mar 07 18:22	16°♄44'27	10.93600 AU
evening set	4637 Dec 23 14:39	16°♄46'03		morning rise	4643 Mar 24 12:49	18°♄43'48	
				retrograde	4643 Jul 05 00:31	25°♄57'10	
conjunction	4638 Jan 09 11:35	18°♄46'50	1°00'42	opposition	4643 Sep 13 16:23	22°♄37'08	-1°-33'-12
minimum elong	4638 Jan 09 11:37	18°♄46'51	1°00'43	min. Earth dist.	4643 Sep 13 17:10	22°♄36'59	8.91748 AU
max. Earth dist.	4638 Jan 09 10:59	18°♄46'39	10.86498 AU	direct	4643 Nov 22 12:30	19°♄18'31	
morning rise	4638 Jan 26 05:50	20°♄46'52		evening set	4644 Mar 01 21:05	26°♄25'03	
retrograde	4638 May 06 09:05	27°♄54'00					
opposition	4638 Jul 14 20:22	24°♄35'51	0°59'46	conjunction	4644 Mar 18 13:13	28°♄24'11	-1°-26'-19
min. Earth dist.	4638 Jul 14 21:16	24°♄35'40	8.89209 AU	minimum elong	4644 Mar 18 13:11	28°♄24'11	1°26'20
direct	4638 Sep 23 16:05	21°♄14'38		max. Earth dist.	4644 Mar 18 11:55	28°♄23'48	10.89351 AU
evening set	4639 Jan 04 12:00	28°♄29'38			4644 Mar 31 22:08	0°♄	
	4639 Jan 17 04:55	0°♄		morning rise	4644 Apr 04 07:27	0°♄23'58	
				retrograde	4644 Jul 16 10:18	7°♄42'25	
conjunction	4639 Jan 21 07:14	0°♄29'24	0°36'11	opposition	4644 Sep 25 03:45	4°♄21'23	-1°-57'-28
minimum elong	4639 Jan 21 07:16	0°♄29'24	0°36'12	min. Earth dist.	4644 Sep 25 04:18	4°♄21'17	8.86673 AU
max. Earth dist.	4639 Jan 21 05:56	0°♄29'01	10.91508 AU	direct	4644 Dec 03 15:35	1°♄02'38	
morning rise	4639 Feb 07 00:43	2°♄28'38		evening set	4645 Mar 13 17:55	8°♄11'20	
retrograde	4639 May 18 08:54	9°♄34'17					
opposition	4639 Jul 27 06:07	6°♄16'14	0°28'43	conjunction	4645 Mar 30 10:56	10°♄11'23	-1°-44'-12
min. Earth dist.	4639 Jul 27 07:08	6°♄16'03	8.93405 AU	minimum elong	4645 Mar 30 10:54	10°♄11'23	1°44'13
direct	4639 Oct 06 00:50	2°♄55'55		max. Earth dist.	4645 Mar 30 10:48	10°♄11'21	10.83465 AU
evening set	4640 Jan 16 05:44	10°♄06'45		morning rise	4645 Apr 16 06:32	12°♄12'15	
				retrograde	4645 Jul 29 02:46	19°♄36'42	
conjunction	4640 Feb 01 23:41	12°♄05'45	0°10'24	opposition	4645 Oct 07 17:38	16°♄14'29	-2°-17'-4
minimum elong	4640 Feb 01 23:42	12°♄05'46	0°10'25	min. Earth dist.	4645 Oct 07 17:11	16°♄14'35	8.80096 AU
behind sun begin	4640 Feb 01 18:09	12°♄04'08		direct	4645 Dec 15 20:28	12°♄55'23	
behind sun end	4640 Feb 02 05:14	12°♄07'24		evening set	4646 Mar 25 19:13	20°♄07'20	
max. Earth dist.	4640 Feb 01 22:28	12°♄05'24	10.94862 AU				
morning rise	4640 Feb 18 16:39	14°♄04'28		conjunction	4646 Apr 11 13:44	22°♄08'39	-1°-57'-49
	4640 Feb 26 17:29	15°♄		minimum elong	4646 Apr 11 13:42	22°♄08'39	1°57'50
retrograde	4640 May 29 10:36	21°♄10'02		max. Earth dist.	4646 Apr 11 14:15	22°♄08'49	10.76216 AU
desc. node	4640 Jun 30 05:30	20°♄22'06		morning rise	4646 Apr 28 11:22	24°♄10'59	
opposition	4640 Aug 07 14:38	17°♄51'48	0°-3'-15		4646 Jun 25 20:53	0°♄	
min. Earth dist.	4640 Aug 07 15:02	17°♄51'44	8.95864 AU	retrograde	4646 Aug 11 00:25	1°♄42'00	
	4640 Sep 23 04:44	15°♄			4646 Sep 27 04:55	30°♄	
direct	4640 Oct 17 07:50	14°♄32'14		opposition	4646 Oct 20 10:38	28°♄18'34	-2°-31'00
	4640 Nov 10 02:09	15°♄		min. Earth dist.	4646 Oct 20 09:43	28°♄18'45	8.72299 AU
evening set	4641 Jan 26 21:11	21°♄39'59		direct	4646 Dec 28 01:34	24°♄58'52	
					4647 Mar 18 13:29	0°♄	
conjunction	4641 Feb 12 14:14	23°♄38'33	0°-15'-46	evening set	4647 Apr 07 02:12	2°♄15'08	
minimum elong	4641 Feb 12 14:13	23°♄38'33	0°15'47				
behind sun begin	4641 Feb 12 12:29	23°♄38'02		conjunction	4647 Apr 23 22:47	4°♄18'03	-2°-6'-24
behind sun end	4641 Feb 12 15:57	23°♄39'03		minimum elong	4647 Apr 23 22:46	4°♄18'03	2°06'25
max. Earth dist.	4641 Feb 12 13:59	23°♄38'29	10.96392 AU	max. Earth dist.	4647 Apr 23 23:04	4°♄18'08	10.67919 AU
morning rise	4641 Mar 01 06:49	25°♄37'01		morning rise	4647 May 10 23:11	6°♄22'09	
	4641 Apr 12 08:19	0°♄		retrograde	4647 Aug 24 01:43	14°♄00'07	
retrograde	4641 Jun 10 13:08	2°♄43'51		opposition	4647 Nov 02 07:10	10°♄35'29	-2°-38'-23
	4641 Aug 12 02:10	30°♄		min. Earth dist.	4647 Nov 02 06:26	10°♄35'37	8.63623 AU
opposition	4641 Aug 19 22:41	29°♄25'13	0°-34'-59	direct	4648 Jan 09 12:29	7°♄14'59	
min. Earth dist.	4641 Aug 19 22:25	29°♄25'15	8.96446 AU	evening set	4648 Apr 18 15:37	14°♄36'28	
direct	4641 Oct 29 10:22	26°♄06'12			4648 Apr 21 21:18	15°♄	
	4642 Jan 09 03:13	0°♄					
evening set	4642 Feb 07 12:01	3°♄12'09		conjunction	4648 May 05 15:08	16°♄41'19	-2°-9'-18
				minimum elong	4648 May 05 15:08	16°♄41'19	2°09'20



max. Earth dist.	4648 May 05 15:20	16°♄41'23	10.58947 AU	max. Earth dist.	4654 Jul 26 20:03	6°♄12'12	10.14445 AU
morning rise	4648 May 22 18:58	18°♄47'29		morning rise	4654 Aug 13 21:18	8°♄30'28	
retrograde	4648 Sep 05 09:24	26°♄32'29			4654 Oct 14 18:12	15°♄	
opposition	4648 Nov 14 07:44	23°♄06'40	-2°-38'-29	retrograde	4654 Nov 27 06:59	16°♄39'35	
min. Earth dist.	4648 Nov 14 07:10	23°♄06'46	8.54457 AU		4655 Jan 10 08:01	15°♄	
direct	4649 Jan 21 03:55	19°♄45'14		opposition	4655 Feb 02 16:40	13°♄10'59	0°-10'-12
evening set	4649 May 01 12:12	27°♄12'35		min. Earth dist.	4655 Feb 02 15:41	13°♄11'12	8.13146 AU
				direct	4655 Apr 10 15:01	9°♄43'17	
conjunction	4649 May 18 15:33	29°♄19'41	-2°-6'-3	asc. node	4655 May 13 14:36	10°♄42'39	
minimum elong	4649 May 18 15:35	29°♄19'41	2°06'05		4655 Jun 30 11:30	15°♄	
max. Earth dist.	4649 May 18 16:36	29°♄20'00	10.49694 AU	evening set	4655 Jul 23 11:04	17°♄46'36	
	4649 May 24 01:09	0°♄					
morning rise	4649 Jun 04 23:21	1°♄28'10		conjunction	4655 Aug 10 13:10	20°♄05'24	0°07'21
retrograde	4649 Sep 18 23:09	9°♄19'53		minimum elong	4655 Aug 10 13:10	20°♄05'24	0°07'21
opposition	4649 Nov 27 12:16	5°♄53'00	-2°-30'-49	behind sun begin	4655 Aug 10 06:28	20°♄03'16	
min. Earth dist.	4649 Nov 27 11:15	5°♄53'12	8.45205 AU	behind sun end	4655 Aug 10 19:51	20°♄07'32	
direct	4650 Feb 02 23:43	2°♄30'31		max. Earth dist.	4655 Aug 10 14:16	20°♄05'45	10.12403 AU
evening set	4650 May 14 16:52	10°♄04'15		morning rise	4655 Aug 28 16:05	22°♄24'28	
					4655 Nov 17 04:47	0°♄	
conjunction	4650 Jun 01 00:39	12°♄13'47	-1°-56'-29	retrograde	4655 Dec 11 11:35	0°♄32'23	
minimum elong	4650 Jun 01 00:41	12°♄13'48	1°56'31		4656 Jan 04 21:34	30°♄	
max. Earth dist.	4650 Jun 01 02:31	12°♄14'22	10.40579 AU	opposition	4656 Feb 16 14:29	27°♄04'18	0°28'25
morning rise	4650 Jun 18 12:40	14°♄24'41		min. Earth dist.	4656 Feb 16 13:12	27°♄04'34	8.12228 AU
retrograde	4650 Oct 02 17:17	22°♄22'27		direct	4656 Apr 23 17:28	23°♄36'00	
opposition	4650 Dec 10 20:43	18°♄54'41	-2°-15'-18		4656 Jul 23 09:55	0°♄	
min. Earth dist.	4650 Dec 10 19:04	18°♄55'00	8.36307 AU	evening set	4656 Aug 06 06:24	1°♄42'28	
direct	4651 Feb 16 01:55	15°♄31'05					
evening set	4651 May 28 05:46	23°♄11'28		conjunction	4656 Aug 24 08:56	4°♄01'22	0°37'58
				minimum elong	4656 Aug 24 08:54	4°♄01'22	0°37'58
conjunction	4651 Jun 14 18:12	25°♄23'29	-1°-40'-43	max. Earth dist.	4656 Aug 24 10:27	4°♄01'52	10.12616 AU
minimum elong	4651 Jun 14 18:15	25°♄23'30	1°40'44	morning rise	4656 Sep 11 10:57	6°♄20'08	
max. Earth dist.	4651 Jun 14 20:29	25°♄24'13	10.32058 AU	retrograde	4656 Dec 24 14:57	14°♄25'11	
morning rise	4651 Jul 02 10:35	27°♄36'47		opposition	4657 Mar 01 12:10	10°♄57'52	1°05'22
	4651 Jul 22 09:51	0°♄		min. Earth dist.	4657 Mar 01 10:34	10°♄58'11	8.13594 AU
retrograde	4651 Oct 16 16:57	5°♄39'36		direct	4657 May 07 21:23	7°♄29'12	
opposition	4651 Dec 24 09:12	2°♄11'11	-1°-52'-18	evening set	4657 Aug 21 02:17	15°♄37'11	
min. Earth dist.	4651 Dec 24 07:10	2°♄11'36	8.28227 AU				
	4652 Jan 22 21:48	30°♄		conjunction	4657 Sep 08 03:42	17°♄55'26	1°06'19
direct	4652 Feb 29 08:39	28°♄46'28		minimum elong	4657 Sep 08 03:39	17°♄55'25	1°06'20
	4652 Apr 06 05:48	0°♄		max. Earth dist.	4657 Sep 08 05:19	17°♄55'57	10.15074 AU
evening set	4652 Jun 10 02:41	6°♄33'24		morning rise	4657 Sep 26 03:22	20°♄13'10	
				retrograde	4658 Jan 07 15:28	28°♄13'49	
conjunction	4652 Jun 27 19:41	8°♄47'47	-1°-19'-16	opposition	4658 Mar 15 08:57	24°♄47'29	1°38'18
minimum elong	4652 Jun 27 19:44	8°♄47'48	1°19'17	min. Earth dist.	4658 Mar 15 07:34	24°♄47'46	8.17156 AU
max. Earth dist.	4652 Jun 27 21:35	8°♄48'24	10.24590 AU	direct	4658 May 22 02:21	21°♄18'45	
morning rise	4652 Jul 15 16:15	11°♄03'19		evening set	4658 Sep 04 19:54	29°♄26'24	
retrograde	4652 Oct 29 20:36	19°♄09'51			4658 Sep 09 06:42	0°♄	
opposition	4653 Jan 06 01:12	15°♄41'04	-1°-22'-43				
min. Earth dist.	4653 Jan 05 23:30	15°♄41'24	8.21415 AU	conjunction	4658 Sep 22 18:51	1°♄43'17	1°30'40
direct	4653 Mar 13 20:36	12°♄15'13		minimum elong	4658 Sep 22 18:48	1°♄43'16	1°30'41
evening set	4653 Jun 24 07:29	20°♄08'25		max. Earth dist.	4658 Sep 22 20:09	1°♄43'42	10.19625 AU
				morning rise	4658 Oct 10 15:04	3°♄59'21	
conjunction	4653 Jul 12 04:33	22°♄24'50	0°-53'-8	retrograde	4659 Jan 21 10:05	11°♄54'25	
minimum elong	4653 Jul 12 04:35	22°♄24'51	0°53'09	opposition	4659 Mar 29 03:43	8°♄29'11	2°05'16
max. Earth dist.	4653 Jul 12 05:51	22°♄25'15	10.18598 AU	min. Earth dist.	4659 Mar 29 02:56	8°♄29'21	8.22689 AU
morning rise	4653 Jul 30 04:33	24°♄42'12		direct	4659 Jun 05 07:33	5°♄00'37	
	4653 Sep 15 18:35	0°♄		evening set	4659 Sep 19 08:54	13°♄06'04	
retrograde	4653 Nov 13 02:16	2°♄50'51					
	4654 Jan 12 00:47	30°♄		conjunction	4659 Oct 07 04:29	15°♄21'05	1°49'39
opposition	4654 Jan 19 19:53	29°♄22'01	0°-48'-2	minimum elong	4659 Oct 07 04:26	15°♄21'04	1°49'39
min. Earth dist.	4654 Jan 19 18:43	29°♄22'15	8.16279 AU	max. Earth dist.	4659 Oct 07 04:57	15°♄21'14	10.25987 AU
direct	4654 Mar 27 15:02	25°♄55'07		morning rise	4659 Oct 24 20:42	17°♄35'04	
	4654 Jun 05 12:02	0°♄		retrograde	4660 Feb 03 22:49	25°♄23'36	
evening set	4654 Jul 08 18:52	3°♄53'56		opposition	4660 Apr 10 19:21	21°♄59'33	2°24'51
				min. Earth dist.	4660 Apr 10 19:31	21°♄59'31	8.29837 AU
conjunction	4654 Jul 26 19:05	6°♄11'53	0°-23'-42	direct	4660 Jun 18 10:21	18°♄31'21	
minimum elong	4654 Jul 26 19:06	6°♄11'54	0°23'44	evening set	4660 Oct 02 15:11	26°♄32'54	



conjunction	4660 Oct 20 06:57	28° $\overline{45}$ '45	2°02'22	conjunction	4667 Jan 04 17:38	13° $\overline{57}$ '40	1°10'27
minimum elong	4660 Oct 20 06:55	28° $\overline{45}$ '44	2°02'22	minimum elong	4667 Jan 04 17:40	13° $\overline{57}$ '41	1°10'28
max. Earth dist.	4660 Oct 20 06:06	28° $\overline{45}$ '29	10.33741 AU	max. Earth dist.	4667 Jan 04 14:41	13° $\overline{56}$ '47	10.82620 AU
	4660 Oct 30 02:40	0° $\overline{M}$		morning rise	4667 Jan 21 12:41	15° $\overline{58}$ '22	
morning rise	4660 Nov 06 18:57	0° $\overline{M}$ 57'25		retrograde	4667 May 01 13:30	23° $\overline{07}$ '18	
retrograde	4661 Feb 16 05:40	8° $\overline{M}$ 38'54		opposition	4667 Jul 09 20:57	19° $\overline{48}$ '52	1°12'22
opposition	4661 Apr 24 07:20	5° $\overline{M}$ 16'00	2°36'16	min. Earth dist.	4667 Jul 09 22:34	19° $\overline{48}$ '34	8.85433 AU
min. Earth dist.	4661 Apr 24 08:02	5° $\overline{M}$ 15'51	8.38109 AU	direct	4667 Sep 18 17:09	16° $\overline{26}$ '59	
direct	4661 Jul 02 09:45	1° $\overline{M}$ 48'24		evening set	4667 Dec 30 19:41	23° $\overline{45}$ '00	
evening set	4661 Oct 16 13:10	9° $\overline{M}$ 44'39					
conjunction	4661 Nov 03 01:04	11° $\overline{M}$ 55'14	2°08'24	conjunction	4668 Jan 16 15:51	25° $\overline{45}$ '25	0°46'47
minimum elong	4661 Nov 03 01:03	11° $\overline{M}$ 55'13	2°08'24	minimum elong	4668 Jan 16 15:53	25° $\overline{45}$ '26	0°46'48
max. Earth dist.	4661 Nov 02 23:21	11° $\overline{M}$ 54'41	10.42354 AU	max. Earth dist.	4668 Jan 16 14:02	25° $\overline{44}$ '53	10.87840 AU
morning rise	4661 Nov 20 08:55	14° $\overline{M}$ 04'33		morning rise	4668 Feb 02 09:43	27° $\overline{45}$ '12	
	4661 Nov 27 23:52	15° $\overline{M}$			4668 Feb 22 07:05	0° $\approx$	
retrograde	4662 Mar 01 06:05	21° $\overline{M}$ 38'58		retrograde	4668 May 12 15:34	4° $\approx$ 52'11	
opposition	4662 May 07 15:11	18° $\overline{M}$ 17'11	2°39'20	opposition	4668 Jul 21 08:05	1° $\approx$ 33'45	0°42'03
min. Earth dist.	4662 May 07 16:05	18° $\overline{M}$ 17'00	8.46946 AU	min. Earth dist.	4668 Jul 21 09:07	1° $\approx$ 33'33	8.89890 AU
	4662 Jul 02 11:42	15° $\overline{R}$ $\overline{M}$			4668 Aug 12 02:26	30° $\overline{R}$ $\overline{S}$	
direct	4662 Jul 16 05:04	14° $\overline{M}$ 50'24		direct	4668 Sep 30 04:13	28° $\overline{12}$ '39	
	4662 Jul 29 20:49	15° $\overline{M}$			4668 Nov 16 17:19	0° $\approx$	
evening set	4662 Oct 30 02:13	22° $\overline{M}$ 40'28		evening set	4669 Jan 10 15:20	5° $\approx$ 26'03	
conjunction	4662 Nov 16 10:34	24° $\overline{M}$ 48'50	2°07'48	conjunction	4669 Jan 27 10:05	7° $\approx$ 25'37	0°21'23
minimum elong	4662 Nov 16 10:35	24° $\overline{M}$ 48'51	2°07'48	minimum elong	4669 Jan 27 10:06	7° $\approx$ 25'37	0°21'23
max. Earth dist.	4662 Nov 16 08:35	24° $\overline{M}$ 48'13	10.51282 AU	max. Earth dist.	4669 Jan 27 08:49	7° $\approx$ 25'14	10.91533 AU
morning rise	4662 Dec 03 14:39	26° $\overline{M}$ 55'57		morning rise	4669 Feb 13 03:12	9° $\approx$ 24'45	
	4662 Dec 30 06:20	0° $\overline{S}$			4669 Apr 11 12:02	15° $\approx$	
retrograde	4663 Mar 14 01:51	4° $\overline{S}$ 23'44		retrograde	4669 May 24 18:14	16° $\approx$ 31'05	
opposition	4663 May 20 18:51	1° $\overline{S}$ 02'58	2°34'25		4669 Jul 08 07:06	15° $\overline{R}$ $\approx$	
min. Earth dist.	4663 May 20 19:57	1° $\overline{S}$ 02'45	8.55851 AU	opposition	4669 Aug 02 17:46	13° $\approx$ 12'28	0°10'16
	4663 Jun 03 11:49	30° $\overline{R}$ $\overline{M}$		min. Earth dist.	4669 Aug 02 18:49	13° $\approx$ 12'16	8.92765 AU
direct	4663 Jul 29 18:22	27° $\overline{M}$ 37'09		direct	4669 Oct 12 11:43	9° $\approx$ 52'02	
	4663 Sep 22 09:01	0° $\overline{S}$		desc. node	4669 Dec 01 04:30	11° $\approx$ 49'12	
evening set	4663 Nov 12 06:26	5° $\overline{S}$ 20'35			4670 Jan 04 07:49	15° $\approx$	
conjunction	4663 Nov 29 11:37	7° $\overline{S}$ 26'56	2°00'56	evening set	4670 Jan 22 08:04	17° $\approx$ 01'53	
minimum elong	4663 Nov 29 11:38	7° $\overline{S}$ 26'56	2°00'57	conjunction	4670 Feb 08 01:35	19° $\approx$ 00'54	0°-4'-50
max. Earth dist.	4663 Nov 29 09:41	7° $\overline{S}$ 26'20	10.60096 AU	minimum elong	4670 Feb 08 01:34	19° $\approx$ 00'54	0°04'52
morning rise	4663 Dec 16 12:29	9° $\overline{S}$ 32'01		behind sun begin	4670 Feb 07 18:44	18° $\approx$ 58'53	
retrograde	4664 Mar 25 17:41	16° $\overline{S}$ 53'46		behind sun end	4670 Feb 08 08:23	19° $\approx$ 02'54	
opposition	4664 Jun 01 18:39	13° $\overline{S}$ 33'55	2°22'12	max. Earth dist.	4670 Feb 08 00:03	19° $\approx$ 00'29	10.93574 AU
min. Earth dist.	4664 Jun 01 20:21	13° $\overline{S}$ 33'36	8.64457 AU	morning rise	4670 Feb 24 18:26	20° $\approx$ 59'43	
direct	4664 Aug 11 01:03	10° $\overline{S}$ 09'08		retrograde	4670 Jun 05 18:53	28° $\approx$ 06'44	
evening set	4664 Nov 24 02:22	17° $\overline{S}$ 45'45		opposition	4670 Aug 15 02:28	24° $\approx$ 47'43	0°-21'-47
conjunction	4664 Dec 11 04:39	19° $\overline{S}$ 50'15	1°48'31	min. Earth dist.	4670 Aug 15 03:38	24° $\approx$ 47'30	8.93955 AU
minimum elong	4664 Dec 11 04:41	19° $\overline{S}$ 50'15	1°48'31	direct	4670 Oct 24 15:36	21° $\approx$ 27'50	
max. Earth dist.	4664 Dec 11 02:17	19° $\overline{S}$ 49'32	10.68460 AU	evening set	4671 Feb 02 23:31	28° $\approx$ 35'24	
morning rise	4664 Dec 28 02:57	21° $\overline{S}$ 53'36			4671 Feb 14 21:50	0° $\overline{H}$	
retrograde	4665 Apr 07 03:28	29° $\overline{S}$ 10'03		conjunction	4671 Feb 19 16:09	0° $\overline{H}$ 34'07	0°-30'-41
opposition	4665 Jun 14 14:44	25° $\overline{S}$ 50'56	2°03'41	minimum elong	4671 Feb 19 16:08	0° $\overline{H}$ 34'06	0°30'42
min. Earth dist.	4665 Jun 14 17:09	25° $\overline{S}$ 50'28	8.72455 AU	max. Earth dist.	4671 Feb 19 14:45	0° $\overline{H}$ 33'42	10.93887 AU
direct	4665 Aug 24 02:49	22° $\overline{S}$ 27'09		morning rise	4671 Mar 08 09:02	2° $\overline{H}$ 32'53	
evening set	4665 Dec 06 14:35	29° $\overline{S}$ 57'05		retrograde	4671 Jun 17 21:29	9° $\overline{H}$ 41'57	
	4665 Dec 07 00:26	0° $\overline{S}$		opposition	4671 Aug 27 10:48	6° $\overline{H}$ 22'22	0°-52'-55
conjunction	4665 Dec 23 14:21	1° $\overline{S}$ 59'57	1°31'22	min. Earth dist.	4671 Aug 27 11:15	6° $\overline{H}$ 22'17	8.93403 AU
minimum elong	4665 Dec 23 14:23	1° $\overline{S}$ 59'58	1°31'23	direct	4671 Nov 05 19:27	3° $\overline{H}$ 02'52	
max. Earth dist.	4665 Dec 23 11:15	1° $\overline{S}$ 59'01	10.76069 AU	evening set	4672 Feb 14 14:53	10° $\overline{H}$ 09'25	
morning rise	4666 Jan 09 10:48	4° $\overline{S}$ 01'51		conjunction	4672 Mar 02 07:10	12° $\overline{H}$ 08'11	0°-55'-20
retrograde	4666 Apr 19 09:20	11° $\overline{S}$ 13'59		minimum elong	4672 Mar 02 07:08	12° $\overline{H}$ 08'10	0°55'21
opposition	4666 Jun 27 07:24	7° $\overline{S}$ 55'20	1°40'00	max. Earth dist.	4672 Mar 02 07:03	12° $\overline{H}$ 08'09	10.92442 AU
min. Earth dist.	4666 Jun 27 09:47	7° $\overline{S}$ 54'53	8.79544 AU	morning rise	4672 Mar 19 00:13	14° $\overline{H}$ 07'12	
direct	4666 Sep 06 01:17	4° $\overline{S}$ 32'31		retrograde	4672 Jun 29 05:08	21° $\overline{H}$ 19'35	
evening set	4666 Dec 18 19:52	11° $\overline{S}$ 56'09		opposition	4672 Sep 07 20:01	17° $\overline{H}$ 59'16	-1°-22'-1
				min. Earth dist.	4672 Sep 07 19:21	17° $\overline{H}$ 59'24	8.91117 AU
































































































































direct	4672 Nov 16 21:26	14° <del>✕</del> 40'03		min. Earth dist.	4678 Nov 22 06:07	0° <del>Π</del> 47'39	8.50245 AU
evening set	4673 Feb 25 07:36	21° <del>✕</del> 46'47			4678 Dec 02 11:52	30° <del>℞</del> 8	
conjunction	4673 Mar 13 23:50	23° <del>✕</del> 45'54	-1°-17'-50	direct	4679 Jan 28 22:35	27° <del>♄</del> 25'36	
minimum elong	4673 Mar 13 23:47	23° <del>✕</del> 45'53	1°17'50		4679 Mar 24 23:00	0° <del>Π</del>	
max. Earth dist.	4673 Mar 14 00:34	23° <del>✕</del> 46'07	10.89290 AU	evening set	4679 May 09 13:04	4° <del>Π</del> 56'13	
morning rise	4673 Mar 30 17:32	25° <del>✕</del> 45'31		conjunction	4679 May 26 18:40	7° <del>Π</del> 04'31	-2°-1'-5
	4673 May 09 17:34	0° <del>Υ</del>		minimum elong	4679 May 26 18:42	7° <del>Π</del> 04'32	2°01'07
retrograde	4673 Jul 11 14:14	3° <del>Υ</del> 02'21		max. Earth dist.	4679 May 26 21:05	7° <del>Π</del> 05'17	10.45811 AU
	4673 Sep 16 02:26	30° <del>℞</del>		morning rise	4679 Jun 13 04:46	9° <del>Π</del> 14'13	
opposition	4673 Sep 20 06:51	29° <del>✕</del> 41'11	-1°-47'-56	retrograde	4679 Sep 27 08:47	17° <del>Π</del> 08'58	
min. Earth dist.	4673 Sep 20 05:41	29° <del>✕</del> 41'24	8.87179 AU	opposition	4679 Dec 05 15:44	13° <del>Π</del> 42'07	-2°-22'-27
direct	4673 Nov 28 22:13	26° <del>✕</del> 22'03		min. Earth dist.	4679 Dec 05 13:34	13° <del>Π</del> 42'33	8.41690 AU
	4674 Feb 05 01:52	0° <del>Υ</del>		direct	4680 Feb 10 22:24	10° <del>Π</del> 19'36	
evening set	4674 Mar 09 03:13	3° <del>Υ</del> 30'16		evening set	4680 May 21 22:20	17° <del>Π</del> 56'30	
conjunction	4674 Mar 25 19:49	5° <del>Υ</del> 30'04	-1°-37'-15	conjunction	4680 Jun 08 08:29	20° <del>Π</del> 07'13	-1°-47'-50
minimum elong	4674 Mar 25 19:47	5° <del>Υ</del> 30'03	1°37'15	minimum elong	4680 Jun 08 08:31	20° <del>Π</del> 07'14	1°47'52
max. Earth dist.	4674 Mar 25 20:17	5° <del>Υ</del> 30'12	10.84552 AU	max. Earth dist.	4680 Jun 08 10:37	20° <del>Π</del> 07'53	10.37490 AU
morning rise	4674 Apr 11 14:50	7° <del>Υ</del> 30'35		morning rise	4680 Jun 25 23:02	22° <del>Π</del> 19'16	
retrograde	4674 Jul 24 03:56	14° <del>Υ</del> 52'50			4680 Sep 21 00:30	0° <del>♄</del>	
opposition	4674 Oct 02 19:46	11° <del>Υ</del> 30'44	-2°-9'-35	retrograde	4680 Oct 10 05:18	0° <del>♄</del> 19'15	
min. Earth dist.	4674 Oct 02 18:55	11° <del>Υ</del> 30'54	8.81742 AU		4680 Oct 29 11:44	30° <del>℞</del> 11	
direct	4674 Dec 11 01:43	8° <del>Υ</del> 11'27		opposition	4680 Dec 18 02:24	26° <del>Π</del> 51'44	-2°-2'-29
evening set	4675 Mar 21 02:45	15° <del>Υ</del> 22'21		min. Earth dist.	4680 Dec 18 00:45	26° <del>Π</del> 52'04	8.33637 AU
				direct	4681 Feb 23 03:43	23° <del>Π</del> 28'07	
conjunction	4675 Apr 06 20:26	17° <del>Υ</del> 23'11	-1°-52'-43		4681 May 25 21:53	0° <del>♄</del>	
minimum elong	4675 Apr 06 20:24	17° <del>Υ</del> 23'11	1°52'44	evening set	4681 Jun 04 15:34	1° <del>♄</del> 11'23	
max. Earth dist.	4675 Apr 06 21:02	17° <del>Υ</del> 23'22	10.78419 AU				
morning rise	4675 Apr 23 17:17	19° <del>Υ</del> 24'58		conjunction	4681 Jun 22 06:29	3° <del>♄</del> 24'29	-1°-28'-42
retrograde	4675 Aug 05 22:24	26° <del>Υ</del> 53'24		minimum elong	4681 Jun 22 06:32	3° <del>♄</del> 24'30	1°28'43
opposition	4675 Oct 15 11:39	23° <del>Υ</del> 30'18	-2°-25'-58	max. Earth dist.	4681 Jun 22 08:35	3° <del>♄</del> 25'09	10.29845 AU
min. Earth dist.	4675 Oct 15 10:34	23° <del>Υ</del> 30'30	8.75021 AU	morning rise	4681 Jul 10 01:17	5° <del>♄</del> 38'49	
direct	4675 Dec 23 07:13	20° <del>Υ</del> 10'42		retrograde	4681 Oct 24 06:24	13° <del>♄</del> 42'54	
evening set	4676 Apr 01 07:12	27° <del>Υ</del> 25'19		opposition	4681 Dec 31 16:28	10° <del>♄</del> 14'55	-1°-35'-34
				min. Earth dist.	4681 Dec 31 14:58	10° <del>♄</del> 15'13	8.26423 AU
conjunction	4676 Apr 18 02:48	29° <del>Υ</del> 27'33	-2°-3'-27	direct	4682 Mar 08 13:54	6° <del>♄</del> 50'11	
minimum elong	4676 Apr 18 02:47	29° <del>Υ</del> 27'33	2°03'28	evening set	4682 Jun 18 16:37	14° <del>♄</del> 39'47	
max. Earth dist.	4676 Apr 18 04:35	29° <del>Υ</del> 28'06	10.71138 AU				
	4676 Apr 22 13:09	0° <del>♄</del>		conjunction	4682 Jul 06 11:57	16° <del>♄</del> 55'05	-1°-4'-26
morning rise	4676 May 05 01:58	1° <del>♄</del> 30'54		minimum elong	4682 Jul 06 12:00	16° <del>♄</del> 55'05	1°04'27
retrograde	4676 Aug 17 21:49	9° <del>♄</del> 06'04		max. Earth dist.	4682 Jul 06 14:01	16° <del>♄</del> 55'44	10.23226 AU
opposition	4676 Oct 27 06:55	5° <del>♄</del> 41'54	-2°-36'-6	morning rise	4682 Jul 24 10:22	19° <del>♄</del> 11'23	
min. Earth dist.	4676 Oct 27 04:58	5° <del>♄</del> 42'17	8.67299 AU	retrograde	4682 Nov 07 10:29	27° <del>♄</del> 18'19	
direct	4677 Jan 03 17:14	2° <del>♄</del> 21'50		opposition	4683 Jan 14 09:28	23° <del>♄</del> 50'08	-1°-2'-54
evening set	4677 Apr 13 17:56	9° <del>♄</del> 41'05		min. Earth dist.	4683 Jan 14 07:51	23° <del>♄</del> 50'27	8.20461 AU
				direct	4683 Mar 22 05:17	20° <del>♄</del> 24'20	
conjunction	4677 Apr 30 16:14	11° <del>♄</del> 45'05	-2°-8'-44	evening set	4683 Jul 03 00:44	28° <del>♄</del> 19'51	
minimum elong	4677 Apr 30 16:14	11° <del>♄</del> 45'05	2°08'46		4683 Jul 16 04:21	0° <del>♄</del>	
max. Earth dist.	4677 Apr 30 19:08	11° <del>♄</del> 45'59	10.63029 AU				
morning rise	4677 May 17 18:23	13° <del>♄</del> 50'19		conjunction	4683 Jul 20 23:41	0° <del>♄</del> 36'56	0°-36'-15
	4677 May 27 13:37	15° <del>♄</del>		minimum elong	4683 Jul 20 23:42	0° <del>♄</del> 36'56	0°36'16
retrograde	4677 Aug 31 04:35	21° <del>♄</del> 32'20		max. Earth dist.	4683 Jul 21 01:25	0° <del>♄</del> 37'29	10.18092 AU
opposition	4677 Nov 09 05:50	18° <del>♄</del> 07'10	-2°-39'-13	morning rise	4683 Aug 08 00:47	2° <del>♄</del> 54'44	
min. Earth dist.	4677 Nov 09 03:05	18° <del>♄</del> 07'42	8.58915 AU	retrograde	4683 Nov 21 15:44	11° <del>♄</del> 02'58	
	4677 Dec 31 04:49	15° <del>℞</del> 8		opposition	4684 Jan 28 04:55	7° <del>♄</del> 34'48	0°-26'-14
direct	4678 Jan 16 05:49	14° <del>♄</del> 46'27		min. Earth dist.	4684 Jan 28 03:29	7° <del>♄</del> 35'06	8.16217 AU
	4678 Feb 01 03:29	15° <del>♄</del>		direct	4684 Apr 04 01:33	4° <del>♄</del> 08'00	
evening set	4678 Apr 26 11:43	22° <del>♄</del> 11'06		evening set	4684 Jul 16 14:32	12° <del>♄</del> 08'34	
conjunction	4678 May 13 13:22	24° <del>♄</del> 17'09	-2°-8'-3	conjunction	4684 Aug 03 15:55	14° <del>♄</del> 26'50	0°-5'-49
minimum elong	4678 May 13 13:23	24° <del>♄</del> 17'10	2°08'05	minimum elong	4684 Aug 03 15:55	14° <del>♄</del> 26'50	0°05'49
max. Earth dist.	4678 May 13 16:14	24° <del>♄</del> 18'03	10.54457 AU	behind sun begin	4684 Aug 03 08:55	14° <del>♄</del> 24'37	
morning rise	4678 May 30 19:15	26° <del>♄</del> 24'33		behind sun end	4684 Aug 03 22:55	14° <del>♄</del> 29'04	
	4678 Jul 01 11:02	0° <del>Π</del>		max. Earth dist.	4684 Aug 03 17:02	14° <del>♄</del> 27'11	10.14850 AU
retrograde	4678 Sep 13 16:51	4° <del>Π</del> 13'12			4684 Aug 07 23:10	15° <del>♄</del>	
opposition	4678 Nov 22 08:47	0° <del>Π</del> 47'08	-2°-34'-45	morning rise	4684 Aug 21 18:27	16° <del>♄</del> 45'30	



asc. node	4684 Oct 13 02:44	22°♏29'31		morning rise	4690 Nov 14 20:31	8°♍38'45	
retrograde	4684 Dec 04 21:13	24°♏53'18			4691 Jan 17 04:27	15°♍	
opposition	4685 Feb 10 01:51	21°♏25'24	0°12'14	retrograde	4691 Feb 23 23:37	16°♍16'06	
min. Earth dist.	4685 Feb 10 01:00	21°♏25'34	8.14019 AU		4691 Apr 03 10:05	15°♍	
direct	4685 Apr 18 01:23	17°♏57'43		opposition	4691 May 02 05:00	12°♍53'21	2°39'07
evening set	4685 Jul 31 08:19	26°♏02'08		min. Earth dist.	4691 May 02 06:00	12°♍53'09	8.42417 AU
				direct	4691 Jul 10 13:39	9°♍25'44	
conjunction	4685 Aug 18 10:39	28°♏20'51	0°25'12		4691 Oct 04 23:42	15°♍	
minimum elong	4685 Aug 18 10:37	28°♏20'51	0°25'13	evening set	4691 Oct 24 13:45	17°♍18'22	
max. Earth dist.	4685 Aug 18 10:48	28°♏20'54	10.13738 AU				
	4685 Aug 31 08:00	0°♐		conjunction	4691 Nov 10 23:43	19°♍27'43	2°08'56
morning rise	4685 Sep 05 13:04	0°♐39'36		minimum elong	4691 Nov 10 23:43	19°♍27'43	2°08'55
retrograde	4685 Dec 19 00:49	8°♐45'14		max. Earth dist.	4691 Nov 10 22:10	19°♍27'14	10.46714 AU
opposition	4686 Feb 23 23:07	5°♐17'51	0°50'05	morning rise	4691 Nov 28 05:25	21°♍35'48	
min. Earth dist.	4686 Feb 23 23:03	5°♐17'52	8.14031 AU	retrograde	4692 Mar 07 19:52	29°♍06'14	
direct	4686 May 02 04:48	1°♐49'30		opposition	4692 May 14 09:55	25°♍44'34	2°37'38
evening set	4686 Aug 15 03:28	9°♐56'14		min. Earth dist.	4692 May 14 11:29	25°♍44'16	8.51358 AU
				direct	4692 Jul 23 05:34	22°♍17'48	
conjunction	4686 Sep 02 05:15	12°♐14'37	0°54'41	evening set	4692 Nov 05 21:27	0°♑03'57	
minimum elong	4686 Sep 02 05:13	12°♐14'36	0°54'42		4692 Nov 05 08:23	0°♑	
max. Earth dist.	4686 Sep 02 04:39	12°♐14'26	10.14843 AU				
morning rise	4686 Sep 20 06:05	14°♐32'42		conjunction	4692 Nov 23 03:55	2°♑11'08	2°04'45
retrograde	4687 Jan 02 00:46	22°♐34'39		minimum elong	4692 Nov 23 03:56	2°♑11'09	2°04'45
opposition	4687 Mar 09 19:45	19°♐07'58	1°24'55	max. Earth dist.	4692 Nov 23 01:39	2°♑10'26	10.55760 AU
min. Earth dist.	4687 Mar 09 19:55	19°♐07'56	8.16255 AU	morning rise	4692 Dec 10 06:18	4°♑17'05	
direct	4687 May 16 10:19	15°♐39'13		retrograde	4693 Mar 20 11:53	11°♑41'03	
evening set	4687 Aug 29 21:16	23°♐46'28		opposition	4693 May 27 10:50	8°♑20'22	2°28'31
				min. Earth dist.	4693 May 27 12:17	8°♑20'06	8.60376 AU
conjunction	4687 Sep 16 21:16	26°♐03'50	1°20'53	direct	4693 Aug 05 15:23	4°♑54'40	
minimum elong	4687 Sep 16 21:12	26°♐03'49	1°20'53	evening set	4693 Nov 18 20:13	12°♑33'52	
max. Earth dist.	4687 Sep 16 20:29	26°♐03'35	10.18091 AU				
morning rise	4687 Oct 04 19:13	28°♐20'34		conjunction	4693 Dec 05 23:40	14°♑39'05	1°54'42
	4687 Oct 18 07:22	0°♒		minimum elong	4693 Dec 05 23:42	14°♑39'06	1°54'42
retrograde	4688 Jan 15 19:33	6°♒17'33		max. Earth dist.	4693 Dec 05 21:34	14°♑38'26	10.64678 AU
opposition	4688 Mar 22 14:38	2°♒51'42	1°54'35	morning rise	4693 Dec 22 23:13	16°♑43'08	
min. Earth dist.	4688 Mar 22 14:42	2°♒51'41	8.20529 AU	retrograde	4694 Apr 01 23:05	24°♑01'20	
	4688 May 03 03:08	30°♒		opposition	4694 Jun 09 07:46	20°♑41'31	2°12'39
direct	4688 May 29 16:02	29°♒22'50		min. Earth dist.	4694 Jun 09 08:31	20°♑41'23	8.69042 AU
	4688 Jun 25 01:26	0°♒		direct	4694 Aug 18 19:33	17°♑16'59	
evening set	4688 Sep 12 11:40	7°♒28'49		evening set	4694 Dec 01 10:57	24°♑49'15	
conjunction	4688 Sep 30 08:50	9°♒44'35	1°42'15	conjunction	4694 Dec 18 11:55	26°♑52'43	1°39'33
minimum elong	4688 Sep 30 08:47	9°♒44'34	1°42'16	minimum elong	4694 Dec 18 11:57	26°♑52'44	1°39'34
max. Earth dist.	4688 Sep 30 08:05	9°♒44'21	10.23259 AU	max. Earth dist.	4694 Dec 18 10:43	26°♑52'22	10.73052 AU
morning rise	4688 Oct 18 02:57	11°♒59'26		morning rise	4695 Jan 04 09:08	28°♑55'08	
retrograde	4689 Jan 28 10:16	19°♒50'25			4695 Jan 13 14:25	0°♓	
opposition	4689 Apr 05 06:47	16°♒25'33	2°17'26	retrograde	4695 Apr 14 07:21	6°♓08'28	
min. Earth dist.	4689 Apr 05 06:45	16°♒25'33	8.26568 AU	opposition	4695 Jun 22 00:59	2°♓49'24	1°51'08
direct	4689 Jun 12 18:27	12°♒56'50		min. Earth dist.	4695 Jun 22 01:45	2°♓49'15	8.76972 AU
evening set	4689 Sep 26 20:15	20°♒59'47			4695 Aug 05 04:00	30°♒	
				direct	4695 Aug 31 17:52	29°♒26'01	
conjunction	4689 Oct 14 13:53	23°♒13'35	1°57'44		4695 Sep 27 01:13	0°♓	
minimum elong	4689 Oct 14 13:51	23°♒13'34	1°57'44	evening set	4695 Dec 13 18:38	6°♓51'44	
max. Earth dist.	4689 Oct 14 13:19	23°♒13'24	10.30021 AU				
morning rise	4689 Nov 01 03:42	25°♒26'13		conjunction	4695 Dec 30 17:24	8°♓53'43	1°20'13
	4689 Dec 11 17:42	0°♓		minimum elong	4695 Dec 30 17:26	8°♓53'44	1°20'14
retrograde	4690 Feb 10 20:19	3°♓10'32		max. Earth dist.	4695 Dec 30 16:18	8°♓53'23	10.80511 AU
	4690 Apr 16 01:24	30°♒		morning rise	4696 Jan 16 12:53	10°♓54'46	
opposition	4690 Apr 18 19:48	29°♒46'43	2°32'26	retrograde	4696 Apr 25 12:22	18°♓04'19	
min. Earth dist.	4690 Apr 18 20:02	29°♒46'40	8.34004 AU	opposition	4696 Jul 03 15:16	14°♓45'49	1°25'09
direct	4690 Jun 26 17:47	26°♒18'26		min. Earth dist.	4696 Jul 03 16:30	14°♓45'35	8.83828 AU
	4690 Sep 02 23:24	0°♓		direct	4696 Sep 12 09:45	11°♓23'33	
evening set	4690 Oct 10 21:10	4°♓16'48		evening set	4696 Dec 24 20:21	18°♓43'22	
conjunction	4690 Oct 28 10:58	6°♓28'24	2°06'40	conjunction	4697 Jan 10 17:06	20°♓44'05	0°57'41
minimum elong	4690 Oct 28 10:57	6°♓28'24	2°06'40	minimum elong	4697 Jan 10 17:08	20°♓44'06	0°57'42
max. Earth dist.	4690 Oct 28 10:17	6°♓28'11	10.37984 AU	max. Earth dist.	4697 Jan 10 15:28	20°♓43'36	10.86747 AU



morning rise	4697 Jan 27 11:25	22°  44'05		minimum elong	4703 Mar 21 19:53	0°  24'30	1°28'46
retrograde	4697 May 07 13:39	29°  51'06		max. Earth dist.	4703 Mar 21 19:21	0°  24'21	10.88566 AU
opposition	4697 Jul 16 03:03	26°  32'55	0°55'55	morning rise	4703 Apr 07 14:10	2°  24'25	
min. Earth dist.	4697 Jul 16 04:29	26°  32'39	8.89343 AU	retrograde	4703 Jul 19 19:41	9°  43'39	
direct	4697 Sep 24 23:01	23°  11'42		opposition	4703 Sep 28 11:44	6°  22'32	-2°00'-11
	4698 Jan 01 22:19	0°  ∞		min. Earth dist.	4703 Sep 28 11:37	6°  22'33	8.85834 AU
evening set	4698 Jan 05 17:21	0°  ∞26'28		direct	4703 Dec 06 23:18	3°  03'47	
				evening set	4704 Mar 16 01:08	10°  13'01	
conjunction	4698 Jan 22 12:31	2°  ∞26'11	0°32'58				
minimum elong	4698 Jan 22 12:32	2°  ∞26'12	0°32'59	conjunction	4704 Apr 01 18:17	12°  13'14	-1°-46'-8
max. Earth dist.	4698 Jan 22 10:51	2°  ∞25'42	10.91525 AU	minimum elong	4704 Apr 01 18:15	12°  13'14	1°46'08
morning rise	4698 Feb 08 06:02	4°  ∞25'25		max. Earth dist.	4704 Apr 01 18:25	12°  13'17	10.82561 AU
retrograde	4698 May 19 15:33	11°  ∞31'13		morning rise	4704 Apr 18 13:57	14°  14'17	
opposition	4698 Jul 28 12:48	8°  ∞13'05	0°24'42	retrograde	4704 Jul 31 12:53	21°  13'34	
min. Earth dist.	4698 Jul 28 13:30	8°  ∞12'57	8.93305 AU	opposition	4704 Oct 10 02:13	18°  17'18	-2°-19'-5
direct	4698 Oct 07 08:36	4°  ∞52'47		min. Earth dist.	4704 Oct 10 01:33	18°  17'25	8.79143 AU
evening set	4699 Jan 17 10:53	12°  ∞03'30		direct	4704 Dec 18 02:30	14°  15'812	
				evening set	4705 Mar 28 03:11	22°  10'48	
conjunction	4699 Feb 03 04:57	14°  ∞02'33	0°07'06				
minimum elong	4699 Feb 03 04:56	14°  ∞02'33	0°07'06	conjunction	4705 Apr 13 21:46	24°  12'18	-1°-59'-7
behind sun begin	4699 Feb 02 22:28	14°  ∞00'38		minimum elong	4705 Apr 13 21:44	24°  12'18	1°59'08
behind sun end	4699 Feb 03 11:24	14°  ∞04'27		max. Earth dist.	4705 Apr 13 21:41	24°  12'17	10.75217 AU
max. Earth dist.	4699 Feb 03 04:16	14°  ∞02'21	10.94648 AU	morning rise	4705 Apr 30 19:40	26°  14'50	
	4699 Feb 11 05:48	15°  ∞			4705 Jun 03 21:18	0°  8	
morning rise	4699 Feb 19 21:50	16°  ∞01'17		retrograde	4705 Aug 13 09:41	3°  846'45	
desc. node	4699 May 15 15:50	22°  ∞54'17		opposition	4705 Oct 22 19:56	0°  823'16	-2°-32'-13
retrograde	4699 May 31 17:20	23°  ∞07'10		min. Earth dist.	4705 Oct 22 19:27	0°  823'22	8.71266 AU
opposition	4699 Aug 09 21:24	19°  ∞48'51	0°-7'-19		4705 Oct 27 22:05	30°  R  17	
min. Earth dist.	4699 Aug 09 21:22	19°  ∞48'52	8.95541 AU	direct	4705 Dec 30 09:55	27°  10'32	
direct	4699 Oct 19 13:11	16°  ∞29'19			4706 Feb 28 07:29	0°  8	
evening set	4700 Jan 29 02:35	23°  ∞37'09		evening set	4706 Apr 09 11:00	4°  820'33	
conjunction	4700 Feb 14 19:37	25°  ∞35'46	0°-19'-2	conjunction	4706 Apr 26 07:48	6°  823'42	-2°-6'-59
minimum elong	4700 Feb 14 19:37	25°  ∞35'46	0°19'04	minimum elong	4706 Apr 26 07:48	6°  823'42	2°07'00
max. Earth dist.	4700 Feb 14 19:31	25°  ∞35'44	10.95970 AU	max. Earth dist.	4706 Apr 26 07:37	6°  823'38	10.66867 AU
morning rise	4700 Mar 03 12:12	27°  ∞34'18		morning rise	4706 May 13 08:35	8°  828'02	
	4700 Mar 25 06:34	0°  H			4706 Jul 20 14:30	15°  8	
retrograde	4700 Jun 12 20:15	4°  H41'36		retrograde	4706 Aug 26 12:35	16°  806'53	
opposition	4700 Aug 22 05:39	1°  H22'55	0°-38'-56		4706 Oct 02 22:25	15°  R  8	
min. Earth dist.	4700 Aug 22 05:41	1°  H22'54	8.95941 AU	opposition	4706 Nov 04 17:02	12°  842'11	-2°-38'-40
	4700 Sep 10 10:54	30°  R  ∞		min. Earth dist.	4706 Nov 04 16:44	12°  842'15	8.62556 AU
direct	4700 Oct 31 16:27	28°  ∞03'54		direct	4707 Jan 11 21:32	9°  821'38	
	4700 Dec 19 23:37	0°  H			4707 Apr 07 08:34	15°  8	
evening set	4701 Feb 09 17:47	5°  H10'06		evening set	4707 Apr 22 01:18	16°  843'53	
conjunction	4701 Feb 26 10:01	7°  H08'36	0°-44'-19	conjunction	4707 May 09 01:14	18°  849'00	-2°-9'-6
minimum elong	4701 Feb 26 09:59	7°  H08'35	0°44'21	minimum elong	4707 May 09 01:14	18°  849'00	2°09'08
max. Earth dist.	4701 Feb 26 09:09	7°  H08'20	10.95410 AU	max. Earth dist.	4707 May 09 01:52	18°  849'12	10.57880 AU
morning rise	4701 Mar 15 02:49	9°  H07'15		morning rise	4707 May 26 05:24	20°  855'26	
retrograde	4701 Jun 25 01:01	16°  H17'17		retrograde	4707 Sep 08 20:50	28°  841'15	
opposition	4701 Sep 03 14:21	12°  H57'58	-1°-9'-2	opposition	4707 Nov 17 18:10	25°  815'22	-2°-37'-46
min. Earth dist.	4701 Sep 03 15:01	12°  H57'50	8.94441 AU	min. Earth dist.	4707 Nov 17 17:20	25°  815'31	8.53400 AU
direct	4701 Nov 12 17:46	9°  H39'16		direct	4708 Jan 24 13:25	21°  853'52	
evening set	4702 Feb 21 09:35	16°  H45'09		evening set	4708 May 03 22:47	29°  822'00	
					4708 May 09 02:47	0°  II	
conjunction	4702 Mar 10 01:32	18°  H43'51	-1°-7'-52				
minimum elong	4702 Mar 10 01:30	18°  H43'50	1°07'53	conjunction	4708 May 21 02:37	1°  II29'21	-2°-5'-3
max. Earth dist.	4702 Mar 10 00:20	18°  H43'29	10.92924 AU	minimum elong	4708 May 21 02:38	1°  II29'22	2°05'05
morning rise	4702 Mar 26 18:56	20°  H42'58		max. Earth dist.	4708 May 21 04:29	1°  II29'56	10.48663 AU
retrograde	4702 Jul 07 07:03	27°  H57'02		morning rise	4708 Jun 07 10:42	3°  II38'05	
opposition	4702 Sep 16 00:07	24°  H36'53	-1°-36'-28	retrograde	4708 Sep 21 10:41	11°  II30'33	
min. Earth dist.	4702 Sep 16 00:45	24°  H36'46	8.91025 AU	opposition	4708 Nov 29 23:19	8°  II03'35	-2°-29'-5
direct	4702 Nov 24 19:43	21°  H18'16		min. Earth dist.	4708 Nov 29 21:35	8°  II03'56	8.44216 AU
evening set	4703 Mar 05 03:38	28°  H25'14		direct	4709 Feb 05 10:43	4°  II41'03	
	4703 Mar 18 10:15	0°  Y		evening set	4709 May 17 04:23	12°  II15'30	
conjunction	4703 Mar 21 19:55	0°  Y24'31	-1°-28'-46	conjunction	4709 Jun 03 12:37	14°  II25'18	-1°-54'-40



minimum elong	4709 Jun 03 12:39	14°II25'19	1°54'42	min. Earth dist.	4715 Feb 19 00:35	29°Ω18'44	8.12516 AU
max. Earth dist.	4709 Jun 03 14:51	14°II26'00	10.39651 AU	direct	4715 Apr 27 05:37	25°Ω49'58	
morning rise	4709 Jun 21 01:03	16°II36'27			4715 Jul 07 06:41	0°η	
retrograde	4709 Oct 05 06:44	24°II34'47		evening set	4715 Aug 09 20:18	3°η56'19	
opposition	4709 Dec 13 08:19	21°II06'57	-2°-12'-35				
min. Earth dist.	4709 Dec 13 06:19	21°II07'21	8.35448 AU	conjunction	4715 Aug 27 22:43	6°η15'06	0°41'39
direct	4710 Feb 18 12:07	17°II43'16		minimum elong	4715 Aug 27 22:41	6°η15'06	0°41'39
evening set	4710 May 30 18:12	25°II24'17		max. Earth dist.	4715 Aug 28 00:45	6°η15'46	10.13010 AU
				morning rise	4715 Sep 15 00:25	8°η33'43	
conjunction	4710 Jun 17 07:02	27°II36'33	-1°-38'-8	retrograde	4715 Dec 28 03:21	16°η38'07	
minimum elong	4710 Jun 17 07:05	27°II36'34	1°38'10	opposition	4716 Mar 03 23:50	13°η10'49	1°09'42
max. Earth dist.	4710 Jun 17 08:54	27°II37'08	10.31290 AU	min. Earth dist.	4716 Mar 03 22:10	13°η11'10	8.14097 AU
morning rise	4710 Jul 04 23:55	29°II50'06		direct	4716 May 10 09:47	9°η42'06	
	4710 Jul 06 07:57	0°ϙ		evening set	4716 Aug 23 15:39	17°η49'49	
retrograde	4710 Oct 19 07:06	7°ϙ53'14					
opposition	4710 Dec 26 21:14	4°ϙ24'48	-1°-48'-43	conjunction	4716 Sep 10 16:48	20°η07'52	1°09'33
min. Earth dist.	4710 Dec 26 19:29	4°ϙ25'09	8.27549 AU	minimum elong	4716 Sep 10 16:45	20°η07'51	1°09'34
direct	4711 Mar 03 19:26	0°ϙ59'56		max. Earth dist.	4716 Sep 10 18:17	20°η08'20	10.15669 AU
evening set	4711 Jun 13 15:53	8°ϙ47'26		morning rise	4716 Sep 28 16:07	22°η25'23	
					4716 Dec 19 16:54	0°ϙ	
conjunction	4711 Jul 01 09:12	11°ϙ02'00	-1°-16'-3	retrograde	4717 Jan 10 02:15	0°ϙ25'19	
minimum elong	4711 Jul 01 09:14	11°ϙ02'01	1°16'05		4717 Jan 31 12:28	30°κη	
max. Earth dist.	4711 Jul 01 10:34	11°ϙ02'26	10.24026 AU	opposition	4717 Mar 17 20:11	26°η59'03	1°41'57
morning rise	4711 Jul 19 06:12	13°ϙ17'43		min. Earth dist.	4717 Mar 17 19:16	26°η59'14	8.17842 AU
retrograde	4711 Nov 02 09:38	21°ϙ24'21		direct	4717 May 24 14:53	23°η30'16	
opposition	4712 Jan 09 13:30	17°ϙ55'33	-1°-18'-25		4717 Aug 25 02:11	0°ϙ	
min. Earth dist.	4712 Jan 09 12:14	17°ϙ55'49	8.20963 AU	evening set	4717 Sep 07 08:42	1°ϙ37'32	
direct	4712 Mar 16 09:34	14°ϙ29'34					
evening set	4712 Jun 26 21:08	22°ϙ23'11		conjunction	4717 Sep 25 07:14	3°ϙ54'11	1°33'16
				minimum elong	4717 Sep 25 07:11	3°ϙ54'10	1°33'17
conjunction	4712 Jul 14 18:30	24°ϙ39'44	0°-49'-27	max. Earth dist.	4717 Sep 25 07:48	3°ϙ54'22	10.20382 AU
minimum elong	4712 Jul 14 18:32	24°ϙ39'45	0°49'29	morning rise	4717 Oct 13 03:07	6°ϙ10'01	
max. Earth dist.	4712 Jul 14 19:52	24°ϙ40'10	10.18273 AU	retrograde	4718 Jan 23 20:18	14°ϙ04'17	
morning rise	4712 Aug 01 18:47	26°ϙ57'12		opposition	4718 Mar 31 14:23	10°ϙ39'10	2°08'01
	4712 Aug 27 06:54	0°Ω		min. Earth dist.	4718 Mar 31 14:10	10°ϙ39'13	8.23517 AU
retrograde	4712 Nov 15 13:44	5°Ω05'45		direct	4718 Jun 07 19:03	7°ϙ10'36	
opposition	4713 Jan 22 08:15	1°Ω36'53	0°-43'-16	evening set	4718 Sep 21 20:51	15°ϙ15'33	
min. Earth dist.	4713 Jan 22 07:02	1°Ω37'08	8.16079 AU				
	4713 Feb 11 22:06	30°κϙ		conjunction	4718 Oct 09 15:59	17°ϙ30'20	1°51'29
direct	4713 Mar 30 05:02	28°ϙ09'53		minimum elong	4718 Oct 09 15:56	17°ϙ30'19	1°51'30
	4713 May 14 14:38	0°Ω		max. Earth dist.	4718 Oct 09 15:42	17°ϙ30'14	10.26867 AU
evening set	4713 Jul 11 08:48	6°Ω08'55		morning rise	4718 Oct 27 07:51	19°ϙ44'04	
				retrograde	4719 Feb 06 08:22	27°ϙ31'49	
conjunction	4713 Jul 29 09:18	8°Ω26'56	0°-19'-47	opposition	4719 Apr 14 05:31	24°ϙ07'52	2°26'35
minimum elong	4713 Jul 29 09:19	8°Ω26'56	0°19'48	min. Earth dist.	4719 Apr 14 05:38	24°ϙ07'51	8.30773 AU
max. Earth dist.	4713 Jul 29 10:53	8°Ω27'26	10.14372 AU	direct	4719 Jun 21 21:49	20°ϙ39'45	
morning rise	4713 Aug 16 11:36	10°Ω45'31		evening set	4719 Oct 06 02:01	28°ϙ40'41	
	4713 Sep 21 23:44	15°Ω			4719 Oct 16 16:21	0°ℳ	
retrograde	4713 Nov 29 19:06	18°Ω54'20					
opposition	4714 Feb 05 04:54	15°Ω25'43	0°-5'-16	conjunction	4719 Oct 23 17:27	0°ℳ53'18	2°03'22
min. Earth dist.	4714 Feb 05 03:23	15°Ω26'01	8.13198 AU	minimum elong	4719 Oct 23 17:25	0°ℳ53'17	2°03'23
	4714 Feb 10 10:38	15°κΩ		max. Earth dist.	4719 Oct 23 16:35	0°ℳ53'02	10.34722 AU
asc. node	4714 Mar 28 23:28	12°Ω10'40		morning rise	4719 Nov 10 05:06	3°ℳ04'44	
direct	4714 Apr 13 03:39	11°Ω57'54		retrograde	4720 Feb 19 13:52	10°ℳ45'28	
	4714 Jun 11 15:26	15°Ω		opposition	4720 Apr 26 16:54	7°ℳ22'41	2°36'58
evening set	4714 Jul 26 01:12	20°Ω01'16		min. Earth dist.	4720 Apr 26 16:56	7°ℳ22'40	8.39137 AU
				direct	4720 Jul 04 21:14	3°ℳ55'13	
conjunction	4714 Aug 13 03:25	22°Ω20'03	0°11'16	evening set	4720 Oct 18 23:04	11°ℳ50'45	
minimum elong	4714 Aug 13 03:24	22°Ω20'03	0°11'16				
behind sun begin	4714 Aug 12 22:06	22°Ω18'22		conjunction	4720 Nov 05 10:45	14°ℳ01'05	2°08'34
behind sun end	4714 Aug 13 08:42	22°Ω21'45		minimum elong	4720 Nov 05 10:44	14°ℳ01'05	2°08'34
max. Earth dist.	4714 Aug 13 05:19	22°Ω20'39	10.12572 AU	max. Earth dist.	4720 Nov 05 09:49	14°ℳ00'48	10.43434 AU
morning rise	4714 Aug 31 06:09	24°Ω39'02			4720 Nov 13 07:14	15°ℳ	
	4714 Oct 18 03:13	0°η		morning rise	4720 Nov 22 18:12	16°ℳ10'09	
retrograde	4714 Dec 14 00:31	2°η46'27		retrograde	4721 Mar 03 14:20	23°ℳ43'49	
	4715 Feb 10 14:13	30°κΩ		opposition	4721 May 10 00:07	20°ℳ22'08	2°39'02
opposition	4715 Feb 19 02:26	29°Ω18'22	0°33'12	min. Earth dist.	4721 May 10 00:30	20°ℳ22'03	8.48069 AU



direct	4721 Jul 18 15:11	16° $\mathbb{M}$ 55'29		direct	4727 Oct 03 10:27	0° $\approx$ 10'02	
evening set	4721 Nov 01 11:10	24° $\mathbb{M}$ 44'42		evening set	4728 Jan 13 20:39	7° $\approx$ 23'16	
conjunction	4721 Nov 18 19:17	26° $\mathbb{M}$ 52'50	2°07'10	conjunction	4728 Jan 30 15:16	9° $\approx$ 22'50	0°18'06
minimum elong	4721 Nov 18 19:18	26° $\mathbb{M}$ 52'50	2°07'10	minimum elong	4728 Jan 30 15:16	9° $\approx$ 22'50	0°18'07
max. Earth dist.	4721 Nov 18 18:02	26° $\mathbb{M}$ 52'27	10.52445 AU	max. Earth dist.	4728 Jan 30 12:54	9° $\approx$ 22'08	10.91522 AU
morning rise	4721 Dec 05 22:59	28° $\mathbb{M}$ 59'41		morning rise	4728 Feb 16 08:30	11° $\approx$ 22'00	
	4721 Dec 14 08:17	0° $\mathcal{A}$			4728 Mar 21 00:01	15° $\approx$	
retrograde	4722 Mar 16 10:43	6° $\mathcal{A}$ 26'38		retrograde	4728 May 26 23:38	18° $\approx$ 28'32	
opposition	4722 May 23 03:18	3° $\mathcal{A}$ 06'00	2°33'10	opposition	4728 Aug 05 00:28	15° $\approx$ 09'54	0°06'12
min. Earth dist.	4722 May 23 04:36	3° $\mathcal{A}$ 05'45	8.57023 AU	min. Earth dist.	4728 Aug 05 02:25	15° $\approx$ 09'32	8.92596 AU
	4722 Jul 12 06:35	30° $\mathbb{R}$ $\mathbb{M}$			4728 Aug 07 05:36	15° $\mathbb{R}$ $\approx$	
direct	4722 Aug 01 01:56	29° $\mathbb{M}$ 40'18		direct	4728 Oct 14 17:01	11° $\approx$ 49'30	
	4722 Aug 20 21:48	0° $\mathcal{A}$		desc. node	4728 Oct 16 20:26	11° $\approx$ 49'44	
evening set	4722 Nov 14 14:17	7° $\mathcal{A}$ 22'48		evening set	4728 Dec 18 00:53	15° $\approx$	
					4729 Jan 24 13:29	18° $\approx$ 59'24	
conjunction	4722 Dec 01 19:10	9° $\mathcal{A}$ 28'55	1°59'36	conjunction	4729 Feb 10 06:55	20° $\approx$ 58'26	0°-8'-8
minimum elong	4722 Dec 01 19:12	9° $\mathcal{A}$ 28'55	1°59'36	minimum elong	4729 Feb 10 06:54	20° $\approx$ 58'25	0°08'09
max. Earth dist.	4722 Dec 01 17:03	9° $\mathcal{A}$ 28'16	10.61256 AU	behind sun begin	4729 Feb 10 00:40	20° $\approx$ 56'35	
morning rise	4722 Dec 18 19:49	11° $\mathcal{A}$ 33'48		behind sun end	4729 Feb 10 13:08	21° $\approx$ 00'16	
retrograde	4723 Mar 28 23:44	18° $\mathcal{A}$ 54'46		max. Earth dist.	4729 Feb 10 04:43	20° $\approx$ 57'47	10.93248 AU
opposition	4723 Jun 05 02:29	15° $\mathcal{A}$ 35'02	2°20'08	morning rise	4729 Feb 26 23:52	22° $\approx$ 57'18	
min. Earth dist.	4723 Jun 05 04:54	15° $\mathcal{A}$ 34'35	8.65574 AU		4729 May 29 06:51	0° $\mathcal{H}$	
direct	4723 Aug 14 09:20	12° $\mathcal{A}$ 10'22		retrograde	4729 Jun 08 01:07	0° $\mathcal{H}$ 04'47	
evening set	4723 Nov 27 09:17	19° $\mathcal{A}$ 46'08			4729 Jun 17 21:49	30° $\mathbb{R}$ $\approx$	
conjunction	4723 Dec 14 11:17	21° $\mathcal{A}$ 50'25	1°46'34	opposition	4729 Aug 17 09:25	26° $\approx$ 45'40	0°-25'-48
minimum elong	4723 Dec 14 11:19	21° $\mathcal{A}$ 50'26	1°46'34	min. Earth dist.	4729 Aug 17 10:40	26° $\approx$ 45'26	8.93473 AU
max. Earth dist.	4723 Dec 14 07:56	21° $\mathcal{A}$ 49'24	10.69509 AU	direct	4729 Oct 26 23:15	23° $\approx$ 25'46	
morning rise	4723 Dec 31 09:34	23° $\mathcal{A}$ 53'37		evening set	4730 Jan 31 09:24	0° $\mathcal{H}$	
	4724 Mar 03 14:43	0° $\mathcal{B}$			4730 Feb 05 05:08	0° $\mathcal{H}$ 33'33	
retrograde	4724 Apr 09 08:48	1° $\mathcal{B}$ 09'28		conjunction	4730 Feb 21 21:51	2° $\mathcal{H}$ 32'21	0°-33'-53
	4724 May 17 00:49	30° $\mathbb{R}$ $\mathcal{A}$		minimum elong	4730 Feb 21 21:50	2° $\mathcal{H}$ 32'21	0°33'54
opposition	4724 Jun 16 21:54	27° $\mathcal{A}$ 50'26	2°00'55	max. Earth dist.	4730 Feb 21 20:51	2° $\mathcal{H}$ 32'03	10.93252 AU
min. Earth dist.	4724 Jun 17 00:37	27° $\mathcal{A}$ 49'55	8.73414 AU	morning rise	4730 Mar 10 14:42	4° $\mathcal{H}$ 31'13	
direct	4724 Aug 26 11:54	24° $\mathcal{A}$ 26'47		retrograde	4730 Jun 20 06:04	11° $\mathcal{H}$ 40'55	
	4724 Nov 22 01:36	0° $\mathcal{B}$		opposition	4730 Aug 29 18:10	8° $\mathcal{H}$ 21'11	0°-56'-45
evening set	4724 Dec 08 20:44	1° $\mathcal{B}$ 56'00		min. Earth dist.	4730 Aug 29 18:12	8° $\mathcal{H}$ 21'11	8.92625 AU
conjunction	4724 Dec 25 20:22	3° $\mathcal{B}$ 58'43	1°28'54	direct	4730 Nov 08 02:11	5° $\mathcal{H}$ 01'40	
minimum elong	4724 Dec 25 20:24	3° $\mathcal{B}$ 58'44	1°28'55	evening set	4731 Feb 16 21:00	12° $\mathcal{H}$ 08'34	
max. Earth dist.	4724 Dec 25 16:52	3° $\mathcal{B}$ 57'40	10.76921 AU	conjunction	4731 Mar 05 13:20	14° $\mathcal{H}$ 07'27	0°-58'-20
morning rise	4725 Jan 11 16:46	6° $\mathcal{B}$ 00'29		minimum elong	4731 Mar 05 13:18	14° $\mathcal{H}$ 07'26	0°58'21
retrograde	4725 Apr 21 15:52	13° $\mathcal{B}$ 12'13		max. Earth dist.	4731 Mar 05 13:17	14° $\mathcal{H}$ 07'26	10.91521 AU
opposition	4725 Jun 29 14:09	9° $\mathcal{B}$ 53'39	1°36'42	morning rise	4731 Mar 22 06:25	16° $\mathcal{H}$ 06'37	
min. Earth dist.	4725 Jun 29 16:17	9° $\mathcal{B}$ 53'15	8.80266 AU	retrograde	4731 Jul 02 12:51	23° $\mathcal{H}$ 19'46	
direct	4725 Sep 08 08:05	6° $\mathcal{B}$ 30'59		opposition	4731 Sep 11 03:53	19° $\mathcal{H}$ 59'17	-1°-25'-31
evening set	4725 Dec 21 01:27	13° $\mathcal{B}$ 54'02		min. Earth dist.	4731 Sep 11 03:28	19° $\mathcal{H}$ 59'22	8.90069 AU
conjunction	4726 Jan 06 23:12	15° $\mathcal{B}$ 55'28	1°07'36	direct	4731 Nov 20 03:09	16° $\mathcal{H}$ 39'59	
minimum elong	4726 Jan 06 23:14	15° $\mathcal{B}$ 55'28	1°07'37	evening set	4732 Feb 28 14:25	23° $\mathcal{H}$ 47'17	
max. Earth dist.	4726 Jan 06 20:36	15° $\mathcal{B}$ 54'41	10.83211 AU	conjunction	4732 Mar 16 06:36	25° $\mathcal{H}$ 46'33	-1°-20'-29
morning rise	4726 Jan 23 18:06	17° $\mathcal{B}$ 56'05		minimum elong	4732 Mar 16 06:34	25° $\mathcal{H}$ 46'32	1°20'30
retrograde	4726 May 03 19:27	25° $\mathcal{B}$ 04'51		max. Earth dist.	4732 Mar 16 06:30	25° $\mathcal{H}$ 46'31	10.88118 AU
opposition	4726 Jul 12 03:36	21° $\mathcal{B}$ 46'28	1°08'41	morning rise	4732 Apr 02 00:29	27° $\mathcal{H}$ 46'20	
min. Earth dist.	4726 Jul 12 05:09	21° $\mathcal{B}$ 46'10	8.85875 AU		4732 Apr 21 17:09	0° $\mathcal{Y}$	
direct	4726 Sep 20 23:37	18° $\mathcal{B}$ 24'41		retrograde	4732 Jul 13 23:15	5° $\mathcal{Y}$ 04'06	
evening set	4727 Jan 02 01:01	25° $\mathcal{B}$ 42'21		opposition	4732 Sep 22 15:20	1° $\mathcal{Y}$ 42'46	-1°-50'-57
conjunction	4727 Jan 18 21:08	27° $\mathcal{B}$ 42'43	0°43'39	min. Earth dist.	4732 Sep 22 14:56	1° $\mathcal{Y}$ 42'50	8.85902 AU
minimum elong	4727 Jan 18 21:10	27° $\mathcal{B}$ 42'43	0°43'40		4732 Oct 16 14:45	30° $\mathbb{R}$ $\mathcal{H}$	
max. Earth dist.	4727 Jan 18 19:12	27° $\mathcal{B}$ 42'08	10.88138 AU	direct	4732 Dec 01 05:50	28° $\mathcal{H}$ 23'29	
morning rise	4727 Feb 04 14:58	29° $\mathcal{B}$ 42'27			4733 Jan 14 10:22	0° $\mathcal{Y}$	
	4727 Feb 07 02:58	0° $\approx$		evening set	4733 Mar 11 10:44	5° $\mathcal{Y}$ 32'25	
retrograde	4727 May 15 22:34	6° $\approx$ 49'27		conjunction	4733 Mar 28 03:23	7° $\mathcal{Y}$ 32'24	-1°-39'-27
opposition	4727 Jul 24 14:41	3° $\approx$ 31'03	0°38'06	minimum elong	4733 Mar 28 03:21	7° $\mathcal{Y}$ 32'24	1°39'28
min. Earth dist.	4727 Jul 24 16:29	3° $\approx$ 30'43	8.90033 AU				



max. Earth dist.	4733 Mar 28 03:19	7°Υ32'23	10.83177 AU		4739 Aug 18 07:44	0°☾	
morning rise	4733 Apr 13 22:37	9°Υ33'10		retrograde	4739 Oct 13 20:34	2°☾36'55	
retrograde	4733 Jul 26 13:07	16°Υ56'28			4739 Dec 10 23:49	30°♊II	
opposition	4733 Oct 05 05:00	13°Υ34'09	-2°-11'-59	opposition	4739 Dec 21 16:02	29°♊09'19	-1°-59'-9
min. Earth dist.	4733 Oct 05 04:26	13°Υ34'15	8.80287 AU	min. Earth dist.	4739 Dec 21 13:33	29°♊09'49	8.32485 AU
direct	4733 Dec 13 09:42	10°Υ14'42		direct	4740 Feb 26 16:35	25°♊45'35	
evening set	4734 Mar 23 11:00	17°Υ26'26			4740 May 08 06:34	0°☾	
				evening set	4740 Jun 07 06:14	3°☾29'45	
conjunction	4734 Apr 09 04:57	19°Υ27'31	-1°-54'-21				
minimum elong	4734 Apr 09 04:56	19°Υ27'31	1°54'22	conjunction	4740 Jun 24 21:42	5°☾43'08	-1°-25'-37
max. Earth dist.	4734 Apr 09 06:05	19°Υ27'52	10.76887 AU	minimum elong	4740 Jun 24 21:45	5°☾43'09	1°25'39
morning rise	4734 Apr 26 01:58	21°Υ29'33		max. Earth dist.	4740 Jun 25 01:09	5°☾44'14	10.28874 AU
retrograde	4734 Aug 08 08:13	28°Υ59'09		morning rise	4740 Jul 12 16:49	7°☾57'43	
opposition	4734 Oct 17 21:31	25°Υ35'48	-2°-27'-36	retrograde	4740 Oct 26 21:41	16°☾02'18	
min. Earth dist.	4734 Oct 17 19:58	25°Υ36'06	8.73434 AU	opposition	4741 Jan 03 06:36	12°☾34'16	-1°-31'-23
direct	4734 Dec 25 16:54	22°Υ16'03		min. Earth dist.	4741 Jan 03 04:03	12°☾34'47	8.25649 AU
evening set	4735 Apr 04 16:33	29°Υ31'36		direct	4741 Mar 11 03:58	9°☾09'27	
	4735 Apr 08 15:04	0°♄		evening set	4741 Jun 21 08:11	16°☾59'41	
conjunction	4735 Apr 21 12:28	1°♄34'09	-2°-4'-24	conjunction	4741 Jul 09 03:56	19°☾15'11	-1°00'-47
minimum elong	4735 Apr 21 12:27	1°♄34'08	2°04'25	minimum elong	4741 Jul 09 03:58	19°☾15'12	1°00'48
max. Earth dist.	4735 Apr 21 14:45	1°♄34'51	10.69498 AU	max. Earth dist.	4741 Jul 09 06:41	19°☾16'04	10.22655 AU
morning rise	4735 May 08 11:50	3°♄37'47		morning rise	4741 Jul 27 02:38	21°☾31'39	
retrograde	4735 Aug 21 10:46	11°♄14'07		retrograde	4741 Nov 10 01:42	29°☾38'42	
opposition	4735 Oct 30 17:28	7°♄49'45	-2°-36'-51	opposition	4742 Jan 16 23:51	26°☾10'31	0°-58'-6
min. Earth dist.	4735 Oct 30 15:01	7°♄50'13	8.65632 AU	min. Earth dist.	4742 Jan 16 21:50	26°☾10'55	8.20080 AU
direct	4736 Jan 07 02:14	4°♄29'31		direct	4742 Mar 24 19:35	22°☾44'38	
evening set	4736 Apr 16 04:21	11°♄49'47			4742 Jun 30 06:29	0°♊	
				evening set	4742 Jul 05 16:56	0°♊40'35	
conjunction	4736 May 03 02:55	13°♄54'05	-2°-8'-54				
minimum elong	4736 May 03 02:55	13°♄54'05	2°08'57	conjunction	4742 Jul 23 16:04	2°♊57'46	0°-32'-14
max. Earth dist.	4736 May 03 05:33	13°♄54'54	10.61349 AU	minimum elong	4742 Jul 23 16:06	2°♊57'47	0°32'15
	4736 May 12 01:18	15°♄		max. Earth dist.	4742 Jul 23 17:38	2°♊58'16	10.17893 AU
morning rise	4736 May 20 05:27	15°♄59'39		morning rise	4742 Aug 10 17:23	5°♊15'39	
retrograde	4736 Sep 02 17:43	23°♄42'49		retrograde	4742 Nov 24 07:27	13°♊23'43	
opposition	4736 Nov 11 17:19	20°♄17'29	-2°-38'-59	opposition	4743 Jan 30 19:27	9°♊55'37	0°-21'-7
min. Earth dist.	4736 Nov 11 14:37	20°♄18'00	8.57242 AU	min. Earth dist.	4743 Jan 30 18:14	9°♊55'52	8.16184 AU
direct	4737 Jan 18 15:03	16°♄56'35		direct	4743 Apr 07 15:24	6°♊28'46	
evening set	4737 Apr 28 23:09	24°♄22'19		evening set	4743 Jul 20 06:57	14°♊29'34	
					4743 Jul 24 07:20	15°♊	
conjunction	4737 May 16 01:08	26°♄28'42	-2°-7'-23				
minimum elong	4737 May 16 01:09	26°♄28'42	2°07'26	conjunction	4743 Aug 07 08:21	16°♊47'50	0°-1'-39
max. Earth dist.	4737 May 16 03:27	26°♄29'25	10.52817 AU	minimum elong	4743 Aug 07 08:20	16°♊47'50	0°01'40
morning rise	4737 Jun 02 07:33	28°♄36'26		behind sun begin	4743 Aug 07 00:59	16°♊45'30	
	4737 Jun 13 23:45	0°♊		behind sun end	4743 Aug 07 15:41	16°♊50'10	
retrograde	4737 Sep 16 05:24	6°♊26'12		max. Earth dist.	4743 Aug 07 08:59	16°♊48'00	10.14978 AU
opposition	4737 Nov 24 21:08	2°♊59'58	-2°-33'-27	morning rise	4743 Aug 25 10:57	19°♊06'29	
min. Earth dist.	4737 Nov 24 18:51	3°♊00'25	8.48651 AU	asc. node	4743 Aug 27 03:40	19°♊19'15	
	4738 Jan 11 05:44	30°♊♄		retrograde	4743 Dec 08 12:51	27°♊13'54	
direct	4738 Jan 31 10:28	29°♄38'15		opposition	4744 Feb 13 16:21	23°♊46'07	0°17'21
	4738 Feb 20 11:46	0°♊		min. Earth dist.	4744 Feb 13 15:49	23°♊46'13	8.14301 AU
evening set	4738 May 12 01:39	7°♊09'57		direct	4744 Apr 20 16:39	20°♊18'25	
				evening set	4744 Aug 03 00:42	28°♊22'53	
conjunction	4738 May 29 07:46	9°♊18'38	-1°-59'-34		4744 Aug 15 17:49	0°♊	
minimum elong	4738 May 29 07:48	9°♊18'39	1°59'36				
max. Earth dist.	4738 May 29 10:21	9°♊19'26	10.44295 AU	conjunction	4744 Aug 21 02:57	0°♊41'30	0°29'13
morning rise	4738 Jun 15 18:25	11°♊28'41		minimum elong	4744 Aug 21 02:56	0°♊41'30	0°29'13
retrograde	4738 Sep 29 22:26	19°♊24'25		max. Earth dist.	4744 Aug 21 02:52	0°♊41'29	10.14164 AU
opposition	4738 Dec 08 04:42	15°♊57'27	-2°-20'-5	morning rise	4744 Sep 08 05:18	3°♊00'09	
min. Earth dist.	4738 Dec 08 02:30	15°♊57'53	8.40266 AU	retrograde	4744 Dec 21 14:35	11°♊05'13	
direct	4739 Feb 13 10:56	12°♊34'46		opposition	4745 Feb 26 13:19	7°♊37'58	0°54'53
evening set	4739 May 25 12:02	20°♊12'42		min. Earth dist.	4745 Feb 26 13:12	7°♊38'00	8.14595 AU
				direct	4745 May 04 21:06	4°♊09'39	
conjunction	4739 Jun 11 22:47	22°♊23'46	-1°-45'-30	evening set	4745 Aug 17 19:39	12°♊16'14	
minimum elong	4739 Jun 11 22:49	22°♊23'47	1°45'32				
max. Earth dist.	4739 Jun 12 01:57	22°♊24'46	10.36190 AU	conjunction	4745 Sep 04 21:18	14°♊34'27	0°58'20
morning rise	4739 Jun 29 13:45	24°♊36'10		minimum elong	4745 Sep 04 21:15	14°♊34'26	0°58'20



max. Earth dist.	4745 Sep 04 20:57	14° $\overline{\text{m}}$ 34'20	10.15529 AU	conjunction	4751 Nov 26 14:27	4° $\overline{\text{z}}$ 19'45	2°03'39
morning rise	4745 Sep 22 21:50	16° $\overline{\text{m}}$ 52'19		minimum elong	4751 Nov 26 14:29	4° $\overline{\text{z}}$ 19'46	2°03'40
retrograde	4746 Jan 04 13:26	24° $\overline{\text{m}}$ 53'35		max. Earth dist.	4751 Nov 26 12:13	4° $\overline{\text{z}}$ 19'04	10.56906 AU
opposition	4746 Mar 12 09:35	21° $\overline{\text{m}}$ 27'02	1°29'05	morning rise	4751 Dec 13 16:35	6° $\overline{\text{z}}$ 25'28	
min. Earth dist.	4746 Mar 12 09:16	21° $\overline{\text{m}}$ 27'06	8.17055 AU	retrograde	4752 Mar 22 20:57	13° $\overline{\text{z}}$ 48'38	
direct	4746 May 19 02:06	17° $\overline{\text{m}}$ 58'22		opposition	4752 May 29 21:16	10° $\overline{\text{z}}$ 28'01	2°26'41
evening set	4746 Sep 01 13:01	26° $\overline{\text{m}}$ 05'15		min. Earth dist.	4752 May 29 22:17	10° $\overline{\text{z}}$ 27'49	8.61458 AU
				direct	4752 Aug 08 03:12	7° $\overline{\text{z}}$ 02'24	
conjunction	4746 Sep 19 12:44	28° $\overline{\text{m}}$ 22'24	1°23'56	evening set	4752 Nov 21 06:03	14° $\overline{\text{z}}$ 40'43	
minimum elong	4746 Sep 19 12:41	28° $\overline{\text{m}}$ 22'23	1°23'56				
max. Earth dist.	4746 Sep 19 12:39	28° $\overline{\text{m}}$ 22'22	10.18990 AU	conjunction	4752 Dec 08 09:23	16° $\overline{\text{z}}$ 45'44	1°52'54
	4746 Oct 02 06:48	0° $\underline{\text{a}}$		minimum elong	4752 Dec 08 09:25	16° $\overline{\text{z}}$ 45'44	1°52'54
morning rise	4746 Oct 07 10:11	0° $\underline{\text{a}}$ 38'50		max. Earth dist.	4752 Dec 08 07:46	16° $\overline{\text{z}}$ 45'14	10.65690 AU
retrograde	4747 Jan 18 08:55	8° $\underline{\text{a}}$ 35'02		morning rise	4752 Dec 25 08:38	18° $\overline{\text{z}}$ 49'34	
opposition	4747 Mar 26 04:03	5° $\underline{\text{a}}$ 09'20	1°57'54	retrograde	4753 Apr 04 08:35	26° $\overline{\text{z}}$ 07'06	
min. Earth dist.	4747 Mar 26 03:38	5° $\underline{\text{a}}$ 09'25	8.21520 AU	opposition	4753 Jun 11 17:39	22° $\overline{\text{z}}$ 47'21	2°10'02
direct	4747 Jun 02 05:38	1° $\underline{\text{a}}$ 40'34		min. Earth dist.	4753 Jun 11 18:33	22° $\overline{\text{z}}$ 47'10	8.69966 AU
evening set	4747 Sep 16 02:39	9° $\underline{\text{a}}$ 45'58		direct	4753 Aug 21 06:09	19° $\overline{\text{z}}$ 22'52	
				evening set	4753 Dec 03 19:57	26° $\overline{\text{z}}$ 54'20	
conjunction	4747 Oct 03 23:27	12° $\underline{\text{a}}$ 01'29	1°44'34				
minimum elong	4747 Oct 03 23:24	12° $\underline{\text{a}}$ 01'28	1°44'34	conjunction	4753 Dec 20 20:44	28° $\overline{\text{z}}$ 57'39	1°37'10
max. Earth dist.	4747 Oct 03 23:21	12° $\underline{\text{a}}$ 01'27	10.24326 AU	minimum elong	4753 Dec 20 20:46	28° $\overline{\text{z}}$ 57'40	1°37'10
morning rise	4747 Oct 21 17:01	14° $\underline{\text{a}}$ 16'02		max. Earth dist.	4753 Dec 20 19:25	28° $\overline{\text{z}}$ 57'15	10.73887 AU
retrograde	4748 Feb 01 00:09	22° $\underline{\text{a}}$ 06'07			4753 Dec 29 10:12	0° $\overline{\text{z}}$	
opposition	4748 Apr 07 19:43	18° $\underline{\text{a}}$ 41'24	2°19'45	morning rise	4754 Jan 06 17:47	0° $\overline{\text{z}}$ 59'54	
min. Earth dist.	4748 Apr 07 19:46	18° $\underline{\text{a}}$ 41'24	8.27703 AU	retrograde	4754 Apr 16 16:28	8° $\overline{\text{z}}$ 12'42	
direct	4748 Jun 15 07:26	15° $\underline{\text{a}}$ 12'48		opposition	4754 Jun 24 10:33	4° $\overline{\text{z}}$ 53'40	1°47'53
evening set	4748 Sep 29 10:22	23° $\underline{\text{a}}$ 15'03		min. Earth dist.	4754 Jun 24 12:01	4° $\overline{\text{z}}$ 53'23	8.77708 AU
				direct	4754 Sep 03 02:36	1° $\overline{\text{z}}$ 30'21	
conjunction	4748 Oct 17 03:34	25° $\underline{\text{a}}$ 28'33	1°59'11	evening set	4754 Dec 16 02:50	8° $\overline{\text{z}}$ 55'22	
minimum elong	4748 Oct 17 03:32	25° $\underline{\text{a}}$ 28'32	1°59'12				
max. Earth dist.	4748 Oct 17 02:58	25° $\underline{\text{a}}$ 28'22	10.31202 AU	conjunction	4755 Jan 02 01:22	10° $\overline{\text{z}}$ 57'13	1°17'21
morning rise	4748 Nov 03 16:54	27° $\underline{\text{a}}$ 40'54		minimum elong	4755 Jan 02 01:25	10° $\overline{\text{z}}$ 57'14	1°17'22
	4748 Nov 23 02:11	0° $\overline{\text{m}}$		max. Earth dist.	4755 Jan 01 23:24	10° $\overline{\text{z}}$ 56'38	10.81145 AU
retrograde	4749 Feb 13 07:53	5° $\overline{\text{m}}$ 24'15		morning rise	4755 Jan 18 20:53	12° $\overline{\text{z}}$ 58'12	
opposition	4749 Apr 21 08:09	2° $\overline{\text{m}}$ 00'36	2°33'39	retrograde	4755 Apr 28 19:13	20° $\overline{\text{z}}$ 07'24	
min. Earth dist.	4749 Apr 21 09:05	2° $\overline{\text{m}}$ 00'25	8.35221 AU	opposition	4755 Jul 07 00:23	16° $\overline{\text{z}}$ 48'53	1°21'24
	4749 May 18 05:12	30° $\overline{\text{r}}$ $\underline{\text{a}}$		min. Earth dist.	4755 Jul 07 02:08	16° $\overline{\text{z}}$ 48'33	8.84351 AU
direct	4749 Jun 29 07:32	28° $\underline{\text{a}}$ 32'25		direct	4755 Sep 15 19:33	13° $\overline{\text{z}}$ 26'40	
	4749 Aug 10 00:03	0° $\overline{\text{m}}$		evening set	4755 Dec 28 03:59	20° $\overline{\text{z}}$ 45'58	
evening set	4749 Oct 13 10:21	6° $\overline{\text{m}}$ 30'00					
conjunction	4749 Oct 30 23:38	8° $\overline{\text{m}}$ 41'17	2°07'14	conjunction	4756 Jan 14 00:38	22° $\overline{\text{z}}$ 46'36	0°54'29
minimum elong	4749 Oct 30 23:37	8° $\overline{\text{m}}$ 41'17	2°07'15	minimum elong	4756 Jan 14 00:40	22° $\overline{\text{z}}$ 46'36	0°54'30
max. Earth dist.	4749 Oct 30 22:09	8° $\overline{\text{m}}$ 40'49	10.39214 AU	max. Earth dist.	4756 Jan 13 22:25	22° $\overline{\text{z}}$ 45'56	10.87156 AU
morning rise	4749 Nov 17 08:50	10° $\overline{\text{m}}$ 51'21		morning rise	4756 Jan 30 19:00	24° $\overline{\text{z}}$ 46'32	
	4749 Dec 24 02:25	15° $\overline{\text{m}}$			4756 Mar 22 18:53	0° $\approx$	
retrograde	4750 Feb 26 09:37	18° $\overline{\text{m}}$ 27'45		retrograde	4756 May 09 21:56	1° $\approx$ 53'25	
opposition	4750 May 04 16:46	15° $\overline{\text{m}}$ 05'10	2°39'15		4756 Jun 28 22:51	30° $\overline{\text{r}}$ $\overline{\text{z}}$	
min. Earth dist.	4750 May 04 18:17	15° $\overline{\text{m}}$ 04'52	8.43652 AU	opposition	4756 Jul 18 11:45	28° $\overline{\text{z}}$ 35'11	0°51'51
	4750 May 05 18:50	15° $\overline{\text{r}}$ $\overline{\text{m}}$		min. Earth dist.	4756 Jul 18 12:57	28° $\overline{\text{z}}$ 34'58	8.89627 AU
direct	4750 Jul 13 03:24	11° $\overline{\text{m}}$ 37'38		direct	4756 Sep 27 08:41	25° $\overline{\text{z}}$ 14'01	
	4750 Sep 16 12:13	15° $\overline{\text{m}}$			4756 Dec 16 22:00	0° $\approx$	
evening set	4750 Oct 27 01:45	19° $\overline{\text{m}}$ 29'24		evening set	4757 Jan 08 00:36	2° $\approx$ 28'25	
conjunction	4750 Nov 13 11:18	21° $\overline{\text{m}}$ 38'27	2°08'38	conjunction	4757 Jan 24 19:48	4° $\approx$ 28'08	0°29'34
minimum elong	4750 Nov 13 11:18	21° $\overline{\text{m}}$ 38'27	2°08'38	minimum elong	4757 Jan 24 19:49	4° $\approx$ 28'08	0°29'34
max. Earth dist.	4750 Nov 13 09:00	21° $\overline{\text{m}}$ 37'45	10.47932 AU	max. Earth dist.	4757 Jan 24 18:33	4° $\approx$ 27'45	10.91687 AU
morning rise	4750 Nov 30 16:45	23° $\overline{\text{m}}$ 46'16		morning rise	4757 Feb 10 13:14	6° $\approx$ 27'20	
	4751 Feb 01 08:17	0° $\overline{\text{z}}$		retrograde	4757 May 21 23:52	13° $\approx$ 33'11	
retrograde	4751 Mar 11 06:03	1° $\overline{\text{z}}$ 15'50		opposition	4757 Jul 30 21:27	10° $\approx$ 14'59	0°20'27
	4751 Apr 18 22:53	30° $\overline{\text{r}}$ $\overline{\text{m}}$		min. Earth dist.	4757 Jul 30 21:45	10° $\approx$ 14'56	8.93337 AU
opposition	4751 May 17 21:01	27° $\overline{\text{m}}$ 54'15	2°36'44	direct	4757 Oct 09 16:18	6° $\approx$ 54'45	
min. Earth dist.	4751 May 17 22:28	27° $\overline{\text{m}}$ 53'58	8.52548 AU	evening set	4758 Jan 19 17:58	14° $\approx$ 05'17	
direct	4751 Jul 26 17:42	24° $\overline{\text{m}}$ 27'36			4758 Jan 27 11:56	15° $\approx$	
	4751 Oct 21 09:13	0° $\overline{\text{z}}$		conjunction	4758 Feb 05 11:59	16° $\approx$ 04'19	0°03'38
evening set	4751 Nov 09 08:13	2° $\overline{\text{z}}$ 12'47		minimum elong	4758 Feb 05 11:59	16° $\approx$ 04'19	0°03'38



behind sun begin	4758 Feb 05 05:03	16° $\approx$ 02'16		max. Earth dist.	4764 Apr 15 06:46	26° $\Upsilon$ 19'44	10.74296 AU
behind sun end	4758 Feb 05 18:55	16° $\approx$ 06'21		morning rise	4764 May 02 05:35	28° $\Upsilon$ 22'38	
max. Earth dist.	4758 Feb 05 11:33	16° $\approx$ 04'12	10.94561 AU		4764 May 16 04:22	0° $\delta$	
morning rise	4758 Feb 22 04:50	18° $\approx$ 03'04		retrograde	4764 Aug 14 21:20	5° $\delta$ 55'23	
desc. node	4758 Mar 28 20:10	21° $\approx$ 46'06		opposition	4764 Oct 24 06:48	2° $\delta$ 31'50	-2°-33'-22
retrograde	4758 Jun 03 02:12	25° $\approx$ 09'13		min. Earth dist.	4764 Oct 24 06:47	2° $\delta$ 31'50	8.70306 AU
opposition	4758 Aug 12 06:10	21° $\approx$ 50'51	0°-11'-34		4764 Nov 30 22:11	30° $\mathcal{R}\Upsilon$	
min. Earth dist.	4758 Aug 12 06:25	21° $\approx$ 50'48	8.95338 AU	direct	4764 Dec 31 20:04	29° $\Upsilon$ 12'03	
direct	4758 Oct 21 21:23	18° $\approx$ 31'20			4765 Jan 31 05:09	0° $\delta$	
evening set	4759 Jan 31 09:49	25° $\approx$ 39'10		evening set	4765 Apr 10 21:14	6° $\delta$ 29'43	
conjunction	4759 Feb 17 02:44	27° $\approx$ 37'49	0°-22'-28	conjunction	4765 Apr 27 18:21	8° $\delta$ 33'04	-2°-7'-31
minimum elong	4759 Feb 17 02:43	27° $\approx$ 37'49	0°22'29	minimum elong	4765 Apr 27 18:21	8° $\delta$ 33'04	2°07'33
max. Earth dist.	4759 Feb 17 01:54	27° $\approx$ 37'35	10.95660 AU	max. Earth dist.	4765 Apr 27 18:35	8° $\delta$ 33'09	10.65875 AU
morning rise	4759 Mar 05 19:26	29° $\approx$ 36'25		morning rise	4765 May 14 19:25	10° $\delta$ 37'38	
	4759 Mar 09 04:44	0° $\mathcal{H}$			4765 Jun 23 22:05	15° $\delta$	
retrograde	4759 Jun 15 04:53	6° $\mathcal{H}$ 44'07		retrograde	4765 Aug 28 00:22	18° $\delta$ 17'21	
opposition	4759 Aug 24 14:29	3° $\mathcal{H}$ 25'23	0°-43'-3		4765 Nov 04 13:54	15° $\mathcal{R}\delta$	
min. Earth dist.	4759 Aug 24 15:11	3° $\mathcal{H}$ 25'15	8.95536 AU	opposition	4765 Nov 06 04:29	14° $\delta$ 52'33	-2°-38'-51
direct	4759 Nov 02 23:42	0° $\mathcal{H}$ 06'22		min. Earth dist.	4765 Nov 06 03:57	14° $\delta$ 52'40	8.61546 AU
evening set	4760 Feb 12 01:12	7° $\mathcal{H}$ 12'46		direct	4766 Jan 13 07:57	11° $\delta$ 31'57	
					4766 Mar 19 08:34	15° $\delta$	
conjunction	4760 Feb 28 17:23	9° $\mathcal{H}$ 11'18	0°-47'-34	evening set	4766 Apr 23 12:23	18° $\delta$ 54'55	
minimum elong	4760 Feb 28 17:22	9° $\mathcal{H}$ 11'18	0°47'35				
max. Earth dist.	4760 Feb 28 16:10	9° $\mathcal{H}$ 10'56	10.94922 AU	conjunction	4766 May 10 12:47	21° $\delta$ 00'17	-2°-8'-49
morning rise	4760 Mar 16 10:19	11° $\mathcal{H}$ 10'03		minimum elong	4766 May 10 12:48	21° $\delta$ 00'17	2°08'51
retrograde	4760 Jun 26 08:32	18° $\mathcal{H}$ 20'38		max. Earth dist.	4766 May 10 14:12	21° $\delta$ 00'43	10.56856 AU
opposition	4760 Sep 04 23:25	15° $\mathcal{H}$ 01'14	-1°-12'-51	morning rise	4766 May 27 17:15	23° $\delta$ 06'56	
min. Earth dist.	4760 Sep 05 00:01	15° $\mathcal{H}$ 01'08	8.93885 AU		4766 Aug 08 15:51	0° $\Pi$	
direct	4760 Nov 14 02:19	11° $\mathcal{H}$ 42'32		retrograde	4766 Sep 10 09:31	0° $\Pi$ 53'35	
evening set	4761 Feb 22 17:17	18° $\mathcal{H}$ 48'43			4766 Oct 13 11:22	30° $\mathcal{R}\delta$	
				opposition	4766 Nov 19 06:08	27° $\delta$ 27'36	-2°-36'-56
conjunction	4761 Mar 11 09:20	20° $\mathcal{H}$ 47'30	-1°-10'-48	min. Earth dist.	4766 Nov 19 04:40	27° $\delta$ 27'53	8.52378 AU
minimum elong	4761 Mar 11 09:18	20° $\mathcal{H}$ 47'29	1°10'49	direct	4767 Jan 26 01:04	24° $\delta$ 06'03	
max. Earth dist.	4761 Mar 11 08:52	20° $\mathcal{H}$ 47'22	10.92308 AU		4767 Apr 23 04:51	0° $\Pi$	
morning rise	4761 Mar 28 02:43	22° $\mathcal{H}$ 46'42		evening set	4767 May 06 10:55	1° $\Pi$ 34'54	
	4761 Jul 03 09:21	0° $\Upsilon$					
retrograde	4761 Jul 08 17:45	0° $\Upsilon$ 01'25		conjunction	4767 May 23 15:10	3° $\Pi$ 42'32	-2°-3'-55
	4761 Jul 14 02:06	30° $\mathcal{R}\mathcal{H}$		minimum elong	4767 May 23 15:11	3° $\Pi$ 42'32	2°03'57
opposition	4761 Sep 17 09:32	26° $\mathcal{H}$ 41'10	-1°-39'-50	max. Earth dist.	4767 May 23 17:08	3° $\Pi$ 43'09	10.47654 AU
min. Earth dist.	4761 Sep 17 09:27	26° $\mathcal{H}$ 41'11	8.90362 AU	morning rise	4767 Jun 09 23:38	5° $\Pi$ 51'31	
direct	4761 Nov 26 05:27	23° $\mathcal{H}$ 22'34		retrograde	4767 Sep 24 01:12	13° $\Pi$ 44'42	
	4762 Mar 02 05:34	0° $\Upsilon$		opposition	4767 Dec 02 11:52	10° $\Pi$ 17'40	-2°-27'-12
evening set	4762 Mar 06 11:49	0° $\Upsilon$ 29'51		min. Earth dist.	4767 Dec 02 09:56	10° $\Pi$ 18'03	8.43235 AU
				direct	4768 Feb 07 21:47	6° $\Pi$ 55'02	
conjunction	4762 Mar 23 04:12	2° $\Upsilon$ 29'15	-1°-31'-16	evening set	4768 May 18 17:27	14° $\Pi$ 30'12	
minimum elong	4762 Mar 23 04:10	2° $\Upsilon$ 29'14	1°31'16				
max. Earth dist.	4762 Mar 23 04:13	2° $\Upsilon$ 29'15	10.87848 AU	conjunction	4768 Jun 05 02:02	16° $\Pi$ 40'15	-1°-52'-42
morning rise	4762 Apr 08 22:30	4° $\Upsilon$ 29'16		minimum elong	4768 Jun 05 02:04	16° $\Pi$ 40'16	1°52'44
retrograde	4762 Jul 21 06:28	11° $\Upsilon$ 49'11		max. Earth dist.	4768 Jun 05 03:45	16° $\Pi$ 40'48	10.38720 AU
opposition	4762 Sep 29 21:32	8° $\Upsilon$ 27'59	-2°-2'-56	morning rise	4768 Jun 22 14:58	18° $\Pi$ 51'41	
min. Earth dist.	4762 Sep 29 21:07	8° $\Upsilon$ 28'03	8.85069 AU	retrograde	4768 Oct 06 21:52	26° $\Pi$ 50'35	
direct	4762 Dec 08 06:36	5° $\Upsilon$ 09'13		opposition	4768 Dec 14 21:30	23° $\Pi$ 22'42	-2°-9'-42
evening set	4763 Mar 18 09:59	12° $\Upsilon$ 18'56		min. Earth dist.	4768 Dec 14 19:50	23° $\Pi$ 23'02	8.34573 AU
				direct	4769 Feb 19 23:55	19° $\Pi$ 58'54	
conjunction	4763 Apr 04 03:10	14° $\Upsilon$ 19'16	-1°-48'-4	evening set	4769 Jun 01 08:05	27° $\Pi$ 40'37	
minimum elong	4763 Apr 04 03:08	14° $\Upsilon$ 19'16	1°48'05				
max. Earth dist.	4763 Apr 04 02:47	14° $\Upsilon$ 19'10	10.81737 AU	conjunction	4769 Jun 18 21:20	29° $\Pi$ 53'06	-1°-35'-25
morning rise	4763 Apr 20 23:04	16° $\Upsilon$ 20'28		minimum elong	4769 Jun 18 21:23	29° $\Pi$ 53'07	1°35'26
retrograde	4763 Aug 02 22:58	23° $\Upsilon$ 46'31		max. Earth dist.	4769 Jun 18 22:44	29° $\Pi$ 53'33	10.30497 AU
opposition	4763 Oct 12 12:30	20° $\Upsilon$ 24'11	-2°-21'-6		4769 Jun 19 19:06	0° $\mathcal{G}$	
min. Earth dist.	4763 Oct 12 12:21	20° $\Upsilon$ 24'13	8.78269 AU	morning rise	4769 Jul 06 14:46	2° $\mathcal{G}$ 06'54	
direct	4763 Dec 20 11:39	17° $\Upsilon$ 05'02		retrograde	4769 Oct 20 20:55	10° $\mathcal{G}$ 10'26	
evening set	4764 Mar 29 12:42	24° $\Upsilon$ 18'15		opposition	4769 Dec 28 10:50	6° $\mathcal{G}$ 41'57	-1°-44'-55
				min. Earth dist.	4769 Dec 28 09:32	6° $\mathcal{G}$ 42'13	8.26835 AU
conjunction	4764 Apr 15 07:23	26° $\Upsilon$ 19'55	-2°00'-24	direct	4770 Mar 05 09:40	3° $\mathcal{G}$ 16'58	
minimum elong	4764 Apr 15 07:21	26° $\Upsilon$ 19'54	2°00'25	evening set	4770 Jun 15 06:38	11° $\mathcal{G}$ 05'06	



conjunction	4770 Jul 03 00:24	13° $\mathring{\text{U}}$ 19'53	-1°-12'-41	retrograde	4776 Jan 12 15:24	2° $\mathring{\text{U}}$ 42'12	
minimum elong	4770 Jul 03 00:27	13° $\mathring{\text{U}}$ 19'54	1°12'43		4776 Mar 10 07:51	30° $\mathring{\text{R}}$ $\mathring{\text{M}}$	
max. Earth dist.	4770 Jul 03 01:52	13° $\mathring{\text{U}}$ 20'21	10.23409 AU	opposition	4776 Mar 19 09:28	29° $\mathring{\text{M}}$ 16'00	1°45'39
morning rise	4770 Jul 20 21:47	15° $\mathring{\text{U}}$ 35'47		min. Earth dist.	4776 Mar 19 09:00	29° $\mathring{\text{M}}$ 16'06	8.18410 AU
retrograde	4770 Nov 03 23:16	23° $\mathring{\text{U}}$ 42'37		direct	4776 May 26 04:54	25° $\mathring{\text{M}}$ 47'11	
opposition	4771 Jan 11 03:16	20° $\mathring{\text{U}}$ 13'48	-1°-13'-56		4776 Aug 06 11:41	0° $\mathring{\text{U}}$	
min. Earth dist.	4771 Jan 11 01:59	20° $\mathring{\text{U}}$ 14'04	8.20445 AU	evening set	4776 Sep 08 23:34	3° $\mathring{\text{U}}$ 54'09	
direct	4771 Mar 19 00:10	16° $\mathring{\text{U}}$ 47'42					
evening set	4771 Jun 29 12:28	24° $\mathring{\text{U}}$ 41'49		conjunction	4776 Sep 26 21:43	6° $\mathring{\text{U}}$ 10'36	1°35'54
				minimum elong	4776 Sep 26 21:40	6° $\mathring{\text{U}}$ 10'35	1°35'55
conjunction	4771 Jul 17 10:15	26° $\mathring{\text{U}}$ 58'32	0°-45'-38	max. Earth dist.	4776 Sep 26 21:39	6° $\mathring{\text{U}}$ 10'35	10.21025 AU
minimum elong	4771 Jul 17 10:17	26° $\mathring{\text{U}}$ 58'33	0°45'39	morning rise	4776 Oct 14 17:18	8° $\mathring{\text{U}}$ 26'14	
max. Earth dist.	4771 Jul 17 12:17	26° $\mathring{\text{U}}$ 59'11	10.17865 AU	retrograde	4777 Jan 25 08:29	16° $\mathring{\text{U}}$ 19'48	
morning rise	4771 Aug 04 10:41	29° $\mathring{\text{U}}$ 16'06		opposition	4777 Apr 02 03:07	12° $\mathring{\text{U}}$ 54'46	2°10'47
	4771 Aug 10 07:55	0° $\mathring{\text{Q}}$		min. Earth dist.	4777 Apr 02 02:50	12° $\mathring{\text{U}}$ 54'49	8.24233 AU
retrograde	4771 Nov 18 04:23	7° $\mathring{\text{Q}}$ 24'40		direct	4777 Jun 09 09:41	9° $\mathring{\text{U}}$ 26'12	
opposition	4772 Jan 24 22:11	3° $\mathring{\text{Q}}$ 55'47	0°-38'-19	evening set	4777 Sep 23 10:57	17° $\mathring{\text{U}}$ 30'45	
min. Earth dist.	4772 Jan 24 20:25	3° $\mathring{\text{Q}}$ 56'09	8.15785 AU				
direct	4772 Mar 31 18:51	0° $\mathring{\text{Q}}$ 28'42		conjunction	4777 Oct 11 05:46	19° $\mathring{\text{U}}$ 45'18	1°53'19
evening set	4772 Jul 13 00:30	8° $\mathring{\text{Q}}$ 28'04		minimum elong	4777 Oct 11 05:43	19° $\mathring{\text{U}}$ 45'17	1°53'20
				max. Earth dist.	4777 Oct 11 05:29	19° $\mathring{\text{U}}$ 45'13	10.27640 AU
conjunction	4772 Jul 31 01:16	10° $\mathring{\text{Q}}$ 46'10	0°-15'-43	morning rise	4777 Oct 28 21:13	21° $\mathring{\text{U}}$ 58'49	
minimum elong	4772 Jul 31 01:17	10° $\mathring{\text{Q}}$ 46'10	0°15'44	retrograde	4778 Feb 07 19:09	29° $\mathring{\text{U}}$ 45'51	
behind sun begin	4772 Jul 31 00:43	10° $\mathring{\text{Q}}$ 45'59		opposition	4778 Apr 15 17:49	26° $\mathring{\text{U}}$ 22'00	2°28'19
behind sun end	4772 Jul 31 01:51	10° $\mathring{\text{Q}}$ 46'21		min. Earth dist.	4778 Apr 15 17:22	26° $\mathring{\text{U}}$ 22'06	8.31596 AU
max. Earth dist.	4772 Jul 31 03:37	10° $\mathring{\text{Q}}$ 46'55	10.14194 AU	direct	4778 Jun 23 12:14	22° $\mathring{\text{U}}$ 53'58	
morning rise	4772 Aug 18 03:33	13° $\mathring{\text{Q}}$ 04'47			4778 Sep 30 05:02	0° $\mathring{\text{M}}$	
	4772 Sep 02 19:23	15° $\mathring{\text{Q}}$		evening set	4778 Oct 07 15:11	0° $\mathring{\text{M}}$ 54'21	
retrograde	4772 Dec 01 10:33	21° $\mathring{\text{Q}}$ 13'26					
opposition	4773 Feb 06 18:50	17° $\mathring{\text{Q}}$ 44'48	0°00'-10	conjunction	4778 Oct 25 06:19	3° $\mathring{\text{M}}$ 06'44	2°04'20
min. Earth dist.	4773 Feb 06 16:49	17° $\mathring{\text{Q}}$ 45'12	8.13138 AU	minimum elong	4778 Oct 25 06:17	3° $\mathring{\text{M}}$ 06'43	2°04'21
asc. node	4773 Feb 08 14:26	17° $\mathring{\text{Q}}$ 35'52		max. Earth dist.	4778 Oct 25 06:12	3° $\mathring{\text{M}}$ 06'41	10.35591 AU
	4773 Mar 17 14:05	15° $\mathring{\text{R}}$ $\mathring{\text{Q}}$		morning rise	4778 Nov 11 17:28	5° $\mathring{\text{M}}$ 17'54	
direct	4773 Apr 14 17:47	14° $\mathring{\text{Q}}$ 16'53		retrograde	4779 Feb 21 01:29	12° $\mathring{\text{M}}$ 57'59	
	4773 May 12 18:45	15° $\mathring{\text{Q}}$		opposition	4779 Apr 29 04:46	9° $\mathring{\text{M}}$ 35'18	2°37'35
evening set	4773 Jul 27 17:13	22° $\mathring{\text{Q}}$ 20'28		min. Earth dist.	4779 Apr 29 04:22	9° $\mathring{\text{M}}$ 35'23	8.40049 AU
				direct	4779 Jul 07 09:39	6° $\mathring{\text{M}}$ 07'57	
conjunction	4773 Aug 14 19:28	24° $\mathring{\text{Q}}$ 39'14	0°15'19	evening set	4779 Oct 21 11:20	14° $\mathring{\text{M}}$ 02'49	
minimum elong	4773 Aug 14 19:28	24° $\mathring{\text{Q}}$ 39'14	0°15'20		4779 Oct 29 04:50	15° $\mathring{\text{M}}$	
behind sun begin	4773 Aug 14 17:42	24° $\mathring{\text{Q}}$ 38'41		conjunction	4779 Nov 07 22:44	16° $\mathring{\text{M}}$ 12'57	2°08'40
behind sun end	4773 Aug 14 21:13	24° $\mathring{\text{Q}}$ 39'48		minimum elong	4779 Nov 07 22:44	16° $\mathring{\text{M}}$ 12'56	2°08'40
max. Earth dist.	4773 Aug 14 21:38	24° $\mathring{\text{Q}}$ 39'56	10.12626 AU	max. Earth dist.	4779 Nov 07 22:35	16° $\mathring{\text{M}}$ 12'54	10.44395 AU
morning rise	4773 Sep 01 22:04	26° $\mathring{\text{Q}}$ 58'11		morning rise	4779 Nov 25 05:46	18° $\mathring{\text{M}}$ 21'46	
	4773 Sep 27 03:24	0° $\mathring{\text{M}}$		retrograde	4780 Mar 05 02:14	25° $\mathring{\text{M}}$ 54'43	
retrograde	4773 Dec 15 14:57	5° $\mathring{\text{M}}$ 05'13		opposition	4780 May 11 11:31	22° $\mathring{\text{M}}$ 33'10	2°38'35
opposition	4774 Feb 20 16:14	1° $\mathring{\text{M}}$ 37'09	0°38'08	min. Earth dist.	4780 May 11 12:01	22° $\mathring{\text{M}}$ 33'04	8.49079 AU
min. Earth dist.	4774 Feb 20 14:25	1° $\mathring{\text{M}}$ 37'31	8.12684 AU	direct	4780 Jul 20 01:54	19° $\mathring{\text{M}}$ 06'38	
	4774 Mar 13 05:13	30° $\mathring{\text{R}}$ $\mathring{\text{Q}}$		evening set	4780 Nov 02 22:35	26° $\mathring{\text{M}}$ 55'05	
direct	4774 Apr 28 20:07	28° $\mathring{\text{Q}}$ 08'40					
	4774 Jun 13 19:11	0° $\mathring{\text{M}}$		conjunction	4780 Nov 20 06:21	29° $\mathring{\text{M}}$ 03'00	2°06'26
evening set	4774 Aug 11 12:16	6° $\mathring{\text{M}}$ 15'04		minimum elong	4780 Nov 20 06:22	29° $\mathring{\text{M}}$ 03'00	2°06'26
				max. Earth dist.	4780 Nov 20 05:10	29° $\mathring{\text{M}}$ 02'38	10.53511 AU
conjunction	4774 Aug 29 14:29	8° $\mathring{\text{M}}$ 33'46	0°45'27		4780 Nov 27 22:32	0° $\mathring{\text{Z}}$	
minimum elong	4774 Aug 29 14:27	8° $\mathring{\text{M}}$ 33'45	0°45'28	morning rise	4780 Dec 07 09:47	1° $\mathring{\text{Z}}$ 09'38	
max. Earth dist.	4774 Aug 29 16:07	8° $\mathring{\text{M}}$ 34'17	10.13283 AU	retrograde	4781 Mar 17 19:47	8° $\mathring{\text{Z}}$ 35'47	
morning rise	4774 Sep 16 15:56	10° $\mathring{\text{M}}$ 52'15		opposition	4781 May 24 14:10	5° $\mathring{\text{Z}}$ 15'16	2°31'45
retrograde	4774 Dec 29 17:03	18° $\mathring{\text{M}}$ 56'07		min. Earth dist.	4781 May 24 15:52	5° $\mathring{\text{Z}}$ 14'56	8.58135 AU
opposition	4775 Mar 06 13:29	15° $\mathring{\text{M}}$ 28'53	1°14'09	direct	4781 Aug 02 14:04	1° $\mathring{\text{Z}}$ 49'40	
min. Earth dist.	4775 Mar 06 12:20	15° $\mathring{\text{M}}$ 29'07	8.14477 AU	evening set	4781 Nov 16 00:43	9° $\mathring{\text{Z}}$ 31'17	
direct	4775 May 13 00:06	12° $\mathring{\text{M}}$ 00'06					
evening set	4775 Aug 26 07:07	20° $\mathring{\text{M}}$ 07'40		conjunction	4781 Dec 03 05:13	11° $\mathring{\text{Z}}$ 37'09	1°58'07
				minimum elong	4781 Dec 03 05:15	11° $\mathring{\text{Z}}$ 37'10	1°58'07
conjunction	4775 Sep 13 07:54	22° $\mathring{\text{M}}$ 25'33	1°12'52	max. Earth dist.	4781 Dec 03 02:36	11° $\mathring{\text{Z}}$ 36'21	10.62399 AU
minimum elong	4775 Sep 13 07:51	22° $\mathring{\text{M}}$ 25'32	1°12'53	morning rise	4781 Dec 20 05:43	13° $\mathring{\text{Z}}$ 41'49	
max. Earth dist.	4775 Sep 13 08:36	22° $\mathring{\text{M}}$ 25'47	10.16142 AU	retrograde	4782 Mar 30 08:23	21° $\mathring{\text{Z}}$ 02'01	
morning rise	4775 Oct 01 06:57	24° $\mathring{\text{M}}$ 42'54		opposition	4782 Jun 06 12:46	17° $\mathring{\text{Z}}$ 42'22	2°17'51
	4775 Nov 17 18:27	0° $\mathring{\text{U}}$					































































































































min. Earth dist.	4782 Jun 06 15:12	17° <del>2</del> 41'54	8.66720 AU	behind sun end	4788 Feb 12 19:02	23° <del>2</del> 01'22	
direct	4782 Aug 15 21:26	14° <del>2</del> 17'48		max. Earth dist.	4788 Feb 12 11:59	22° <del>2</del> 59'17	10.93298 AU
evening set	4782 Nov 28 18:37	21° <del>2</del> 52'37		morning rise	4788 Feb 29 06:53	24° <del>2</del> 58'44	
					4788 Apr 18 22:38	0° <del>2</del>	
conjunction	4782 Dec 15 20:24	23° <del>2</del> 56'43	1°44'25	retrograde	4788 Jun 09 10:23	2° <del>2</del> 06'25	
minimum elong	4782 Dec 15 20:26	23° <del>2</del> 56'43	1°44'26		4788 Aug 02 01:43	30° <del>2</del>	
max. Earth dist.	4782 Dec 15 16:57	23° <del>2</del> 55'40	10.70637 AU	opposition	4788 Aug 18 17:53	28° <del>2</del> 47'16	0°-29'-57
morning rise	4783 Jan 01 18:34	25° <del>2</del> 59'42		min. Earth dist.	4788 Aug 18 18:48	28° <del>2</del> 47'06	8.93376 AU
	4783 Feb 07 11:02	0° <del>2</del>		direct	4788 Oct 28 07:20	25° <del>2</del> 27'26	
retrograde	4783 Apr 11 17:43	3° <del>2</del> 14'51			4789 Jan 14 06:55	0° <del>2</del>	
	4783 Jun 18 09:52	30° <del>2</del>		evening set	4789 Feb 06 12:16	2° <del>2</del> 35'09	
opposition	4783 Jun 19 07:28	29° <del>2</del> 55'53	1°57'56				
min. Earth dist.	4783 Jun 19 09:40	29° <del>2</del> 55'28	8.74488 AU	conjunction	4789 Feb 23 05:01	4° <del>2</del> 33'59	0°-37'-12
direct	4783 Aug 28 22:02	26° <del>2</del> 32'22		minimum elong	4789 Feb 23 04:59	4° <del>2</del> 33'59	0°37'13
	4783 Nov 04 06:00	0° <del>2</del>		max. Earth dist.	4789 Feb 23 04:12	4° <del>2</del> 33'45	10.93007 AU
evening set	4783 Dec 11 05:10	4° <del>2</del> 00'42		morning rise	4789 Mar 11 21:48	6° <del>2</del> 32'54	
				retrograde	4789 Jun 21 14:42	13° <del>2</del> 42'59	
conjunction	4783 Dec 28 04:45	6° <del>2</del> 03'16	1°26'15	opposition	4789 Aug 31 02:58	10° <del>2</del> 23'11	-1°00'-41
minimum elong	4783 Dec 28 04:47	6° <del>2</del> 03'17	1°26'16	min. Earth dist.	4789 Aug 31 03:10	10° <del>2</del> 23'09	8.92240 AU
max. Earth dist.	4783 Dec 28 01:48	6° <del>2</del> 02'22	10.77930 AU	direct	4789 Nov 09 09:24	7° <del>2</del> 03'40	
morning rise	4784 Jan 14 00:58	8° <del>2</del> 04'52		evening set	4790 Feb 18 04:24	14° <del>2</del> 10'43	
retrograde	4784 Apr 22 23:43	15° <del>2</del> 16'03					
opposition	4784 Jun 30 23:14	11° <del>2</del> 57'32	1°33'10	conjunction	4790 Mar 06 20:38	16° <del>2</del> 09'39	-1°-1'-23
min. Earth dist.	4784 Jul 01 01:09	11° <del>2</del> 57'11	8.81182 AU	minimum elong	4790 Mar 06 20:36	16° <del>2</del> 09'38	1°01'24
direct	4784 Sep 09 17:31	8° <del>2</del> 35'01		max. Earth dist.	4790 Mar 06 19:50	16° <del>2</del> 09'25	10.90996 AU
evening set	4784 Dec 22 09:20	15° <del>2</del> 57'21		morning rise	4790 Mar 23 13:52	18° <del>2</del> 08'54	
				retrograde	4790 Jul 03 22:10	25° <del>2</del> 22'38	
conjunction	4785 Jan 08 06:59	17° <del>2</del> 58'38	1°04'33	opposition	4790 Sep 12 13:01	22° <del>2</del> 02'03	-1°-29'-3
minimum elong	4785 Jan 08 07:01	17° <del>2</del> 58'38	1°04'34	min. Earth dist.	4790 Sep 12 13:24	22° <del>2</del> 01'59	8.89414 AU
max. Earth dist.	4785 Jan 08 04:33	17° <del>2</del> 57'53	10.84028 AU	direct	4790 Nov 21 11:35	18° <del>2</del> 42'42	
morning rise	4785 Jan 25 01:44	19° <del>2</del> 59'07		evening set	4791 Mar 01 22:16	25° <del>2</del> 50'20	
retrograde	4785 May 05 04:30	27° <del>2</del> 07'30					
opposition	4785 Jul 13 12:25	23° <del>2</del> 49'12	1°04'45	conjunction	4791 Mar 18 14:26	27° <del>2</del> 49'42	-1°-23'-10
min. Earth dist.	4785 Jul 13 14:32	23° <del>2</del> 48'48	8.86580 AU	minimum elong	4791 Mar 18 14:24	27° <del>2</del> 49'41	1°23'10
direct	4785 Sep 22 08:09	20° <del>2</del> 27'32		max. Earth dist.	4791 Mar 18 13:33	27° <del>2</del> 49'26	10.87332 AU
evening set	4786 Jan 03 08:29	27° <del>2</del> 44'38		morning rise	4791 Apr 04 08:31	29° <del>2</del> 49'38	
					4791 Apr 05 19:51	0° <del>2</del>	
conjunction	4786 Jan 20 04:25	29° <del>2</del> 44'54	0°40'21	retrograde	4791 Jul 16 07:59	7° <del>2</del> 08'06	
minimum elong	4786 Jan 20 04:26	29° <del>2</del> 44'54	0°40'22	opposition	4791 Sep 25 00:43	3° <del>2</del> 46'37	-1°-53'-58
max. Earth dist.	4786 Jan 20 01:39	29° <del>2</del> 44'04	10.88726 AU	min. Earth dist.	4791 Sep 25 00:51	3° <del>2</del> 46'36	8.84996 AU
	4786 Jan 22 06:47	0° <del>2</del>		direct	4791 Dec 03 13:52	0° <del>2</del> 27'15	
morning rise	4786 Feb 05 22:15	1° <del>2</del> 44'34		evening set	4792 Mar 12 19:04	7° <del>2</del> 36'43	
retrograde	4786 May 17 05:50	8° <del>2</del> 51'22					
opposition	4786 Jul 25 23:23	5° <del>2</del> 33'01	0°33'57	conjunction	4792 Mar 29 11:53	9° <del>2</del> 36'51	-1°-41'-38
min. Earth dist.	4786 Jul 26 01:57	5° <del>2</del> 32'32	8.90499 AU	minimum elong	4792 Mar 29 11:51	9° <del>2</del> 36'51	1°41'38
direct	4786 Oct 04 18:06	2° <del>2</del> 12'05		max. Earth dist.	4792 Mar 29 12:01	9° <del>2</del> 36'54	10.82150 AU
evening set	4787 Jan 15 03:46	9° <del>2</del> 24'56		morning rise	4792 Apr 15 07:12	11° <del>2</del> 37'46	
				retrograde	4792 Jul 27 22:59	19° <del>2</del> 01'58	
conjunction	4787 Jan 31 22:16	11° <del>2</del> 24'26	0°14'40	opposition	4792 Oct 06 14:53	15° <del>2</del> 39'28	-2°-14'-20
minimum elong	4787 Jan 31 22:17	11° <del>2</del> 24'26	0°14'40	min. Earth dist.	4792 Oct 06 14:02	15° <del>2</del> 39'38	8.79154 AU
behind sun begin	4787 Jan 31 19:11	11° <del>2</del> 23'31		direct	4792 Dec 14 19:38	12° <del>2</del> 19'56	
behind sun end	4787 Feb 01 01:23	11° <del>2</del> 25'21		evening set	4793 Mar 24 19:58	19° <del>2</del> 32'19	
max. Earth dist.	4787 Jan 31 19:12	11° <del>2</del> 23'31	10.91856 AU				
morning rise	4787 Feb 17 15:36	13° <del>2</del> 23'34		conjunction	4793 Apr 10 14:10	21° <del>2</del> 33'37	-1°-55'-55
	4787 Mar 03 17:40	15° <del>2</del>		minimum elong	4793 Apr 10 14:08	21° <del>2</del> 33'36	1°55'56
retrograde	4787 May 29 06:43	20° <del>2</del> 30'08		max. Earth dist.	4793 Apr 10 15:44	21° <del>2</del> 34'06	10.75649 AU
opposition	4787 Aug 07 08:57	17° <del>2</del> 11'29	0°01'58	morning rise	4793 Apr 27 11:18	23° <del>2</del> 35'52	
min. Earth dist.	4787 Aug 07 10:59	17° <del>2</del> 11'06	8.92792 AU		4793 Jul 03 21:59	0° <del>2</del>	
desc. node	4787 Aug 30 12:57	15° <del>2</del> 32'33		retrograde	4793 Aug 09 20:39	1° <del>2</del> 06'27	
	4787 Sep 08 12:15	15° <del>2</del>			4793 Sep 16 08:44	30° <del>2</del>	
direct	4787 Oct 17 02:24	13° <del>2</del> 55'109		opposition	4793 Oct 19 08:01	27° <del>2</del> 42'55	-2°-29'-9
	4787 Nov 23 19:20	15° <del>2</del>		min. Earth dist.	4793 Oct 19 06:04	27° <del>2</del> 43'17	8.72110 AU
evening set	4788 Jan 26 20:30	21° <del>2</del> 00'51		direct	4793 Dec 27 02:03	24° <del>2</del> 23'03	
					4794 Mar 22 22:02	0° <del>2</del>	
conjunction	4788 Feb 12 13:59	22° <del>2</del> 59'52	0°-11'-33	evening set	4794 Apr 06 02:26	1° <del>2</del> 39'23	
minimum elong	4788 Feb 12 13:58	22° <del>2</del> 59'52	0°11'35				
behind sun begin	4788 Feb 12 08:54	22° <del>2</del> 58'22		conjunction	4794 Apr 22 22:34	3° <del>2</del> 42'10	-2°-5'-16



minimum elong	4794 Apr 22 22:33	3° $\text{♄}$ 42'10	2°05'17	morning rise	4800 Jul 28 19:34	23° $\text{♄}$ 53'44	
max. Earth dist.	4794 Apr 23 00:23	3° $\text{♄}$ 42'43	10.68095 AU		4800 Sep 24 02:44	0° $\text{♄}$	
morning rise	4794 May 09 22:16	5° $\text{♄}$ 46'05		retrograde	4800 Nov 11 18:50	2° $\text{♄}$ 01'07	
retrograde	4794 Aug 22 23:01	13° $\text{♄}$ 23'26			4800 Dec 31 04:17	30° $\text{♄}$	
opposition	4794 Nov 01 04:34	9° $\text{♄}$ 58'54	-2°-37'-29	opposition	4801 Jan 18 15:06	28° $\text{♄}$ 32'53	0°-53'-12
min. Earth dist.	4794 Nov 01 02:27	9° $\text{♄}$ 59'18	8.64165 AU	min. Earth dist.	4801 Jan 18 13:13	28° $\text{♄}$ 33'16	8.19398 AU
direct	4795 Jan 08 10:55	6° $\text{♄}$ 38'30		direct	4801 Mar 26 09:55	25° $\text{♄}$ 06'52	
evening set	4795 Apr 18 15:11	13° $\text{♄}$ 59'43			4801 Jun 11 19:22	0° $\text{♄}$	
	4795 Apr 26 21:09	15° $\text{♄}$		evening set	4801 Jul 07 09:54	3° $\text{♄}$ 03'27	
conjunction	4795 May 05 14:00	16° $\text{♄}$ 04'19	-2°-9'00	conjunction	4801 Jul 25 09:17	5° $\text{♄}$ 20'47	0°-28'-8
minimum elong	4795 May 05 14:00	16° $\text{♄}$ 04'19	2°09'02	minimum elong	4801 Jul 25 09:18	5° $\text{♄}$ 20'47	0°28'09
max. Earth dist.	4795 May 05 15:45	16° $\text{♄}$ 04'51	10.59832 AU	max. Earth dist.	4801 Jul 25 10:33	5° $\text{♄}$ 21'11	10.17398 AU
morning rise	4795 May 22 17:01	18° $\text{♄}$ 10'11		morning rise	4801 Aug 12 10:53	7° $\text{♄}$ 38'48	
retrograde	4795 Sep 05 05:46	25° $\text{♄}$ 54'25			4801 Oct 27 09:36	15° $\text{♄}$	
opposition	4795 Nov 14 05:10	22° $\text{♄}$ 28'55	-2°-38'-37	retrograde	4801 Nov 26 00:01	15° $\text{♄}$ 46'53	
min. Earth dist.	4795 Nov 14 03:08	22° $\text{♄}$ 29'18	8.55687 AU		4801 Dec 25 15:29	15° $\text{♄}$	
direct	4796 Jan 21 02:30	19° $\text{♄}$ 07'49		opposition	4802 Feb 01 10:57	12° $\text{♄}$ 18'48	0°-15'-54
evening set	4796 Apr 30 10:51	26° $\text{♄}$ 34'34		min. Earth dist.	4802 Feb 01 10:00	12° $\text{♄}$ 18'59	8.15859 AU
				direct	4802 Apr 09 07:48	8° $\text{♄}$ 51'50	
conjunction	4796 May 17 13:16	28° $\text{♄}$ 41'18	-2°-6'-38		4802 Jul 06 15:24	15° $\text{♄}$	
minimum elong	4796 May 17 13:18	28° $\text{♄}$ 41'18	2°06'41	asc. node	4802 Jul 08 05:08	15° $\text{♄}$ 11'15	
max. Earth dist.	4796 May 17 15:27	28° $\text{♄}$ 41'58	10.51248 AU	evening set	4802 Jul 22 00:27	16° $\text{♄}$ 53'06	
	4796 May 28 03:05	0° $\text{♄}$					
morning rise	4796 Jun 03 20:10	0° $\text{♄}$ 49'23		conjunction	4802 Aug 09 01:58	19° $\text{♄}$ 11'26	0°02'40
retrograde	4796 Sep 17 18:57	8° $\text{♄}$ 40'13		minimum elong	4802 Aug 09 01:56	19° $\text{♄}$ 11'25	0°02'40
opposition	4796 Nov 26 09:44	5° $\text{♄}$ 13'50	-2°-32'-3	behind sun begin	4802 Aug 08 18:37	19° $\text{♄}$ 09'05	
min. Earth dist.	4796 Nov 26 07:38	5° $\text{♄}$ 14'14	8.47079 AU	behind sun end	4802 Aug 09 09:16	19° $\text{♄}$ 13'45	
direct	4797 Feb 01 22:21	1° $\text{♄}$ 51'54		max. Earth dist.	4802 Aug 09 02:37	19° $\text{♄}$ 11'36	10.14814 AU
evening set	4797 May 13 14:26	9° $\text{♄}$ 24'40		morning rise	4802 Aug 27 04:35	21° $\text{♄}$ 30'06	
				retrograde	4802 Dec 10 03:39	29° $\text{♄}$ 37'20	
conjunction	4797 May 30 21:10	11° $\text{♄}$ 33'43	-1°-57'-58	opposition	4803 Feb 15 07:54	26° $\text{♄}$ 09'36	0°22'33
minimum elong	4797 May 30 21:12	11° $\text{♄}$ 33'44	1°58'00	min. Earth dist.	4803 Feb 15 07:11	26° $\text{♄}$ 09'45	8.14292 AU
max. Earth dist.	4797 May 31 00:25	11° $\text{♄}$ 34'44	10.42748 AU	direct	4803 Apr 23 10:06	22° $\text{♄}$ 41'52	
morning rise	4797 Jun 17 08:15	13° $\text{♄}$ 44'08			4803 Jul 30 12:57	0° $\text{♄}$	
retrograde	4797 Oct 01 13:14	21° $\text{♄}$ 40'53		evening set	4803 Aug 05 18:21	0° $\text{♄}$ 46'34	
opposition	4797 Dec 09 17:58	18° $\text{♄}$ 13'45	-2°-17'-38				
min. Earth dist.	4797 Dec 09 15:16	18° $\text{♄}$ 14'17	8.38759 AU	conjunction	4803 Aug 23 20:36	3° $\text{♄}$ 05'10	0°33'18
direct	4798 Feb 14 23:18	14° $\text{♄}$ 50'54		minimum elong	4803 Aug 23 20:35	3° $\text{♄}$ 05'09	0°33'18
evening set	4798 May 27 02:01	22° $\text{♄}$ 29'55		max. Earth dist.	4803 Aug 23 21:08	3° $\text{♄}$ 05'20	10.14300 AU
				morning rise	4803 Sep 10 22:45	5° $\text{♄}$ 23'43	
conjunction	4798 Jun 13 13:23	24° $\text{♄}$ 41'21	-1°-43'-5	retrograde	4803 Dec 24 05:41	13° $\text{♄}$ 28'28	
minimum elong	4798 Jun 13 13:26	24° $\text{♄}$ 41'22	1°43'06	opposition	4804 Feb 29 04:51	10° $\text{♄}$ 01'18	0°59'45
max. Earth dist.	4798 Jun 13 17:19	24° $\text{♄}$ 42'36	10.34753 AU	min. Earth dist.	4804 Feb 29 04:03	10° $\text{♄}$ 01'28	8.14877 AU
morning rise	4798 Jul 01 04:46	26° $\text{♄}$ 54'05		direct	4804 May 06 13:17	6° $\text{♄}$ 32'59	
	4798 Jul 27 14:05	0° $\text{♄}$		evening set	4804 Aug 19 13:15	14° $\text{♄}$ 39'35	
retrograde	4798 Oct 15 11:37	4° $\text{♄}$ 55'44					
opposition	4798 Dec 23 06:00	1° $\text{♄}$ 28'01	-1°-55'-42	conjunction	4804 Sep 06 14:47	16° $\text{♄}$ 57'42	1°02'01
min. Earth dist.	4798 Dec 23 02:50	1° $\text{♄}$ 28'40	8.31139 AU	minimum elong	4804 Sep 06 14:45	16° $\text{♄}$ 57'42	1°02'01
	4799 Jan 11 04:51	30° $\text{♄}$		max. Earth dist.	4804 Sep 06 15:21	16° $\text{♄}$ 57'53	10.15943 AU
direct	4799 Feb 28 06:15	28° $\text{♄}$ 04'10		morning rise	4804 Sep 24 14:55	19° $\text{♄}$ 15'25	
	4799 Apr 16 00:54	0° $\text{♄}$		retrograde	4805 Jan 06 05:39	27° $\text{♄}$ 16'11	
evening set	4799 Jun 09 21:26	5° $\text{♄}$ 49'21		opposition	4805 Mar 14 00:58	23° $\text{♄}$ 49'44	1°33'19
				min. Earth dist.	4805 Mar 14 00:06	23° $\text{♄}$ 49'55	8.17600 AU
conjunction	4799 Jun 27 13:21	8° $\text{♄}$ 03'05	-1°-22'-28	direct	4805 May 20 17:21	20° $\text{♄}$ 21'07	
minimum elong	4799 Jun 27 13:24	8° $\text{♄}$ 03'06	1°22'29	evening set	4805 Sep 03 06:28	28° $\text{♄}$ 27'50	
max. Earth dist.	4799 Jun 27 17:12	8° $\text{♄}$ 04'18	10.27658 AU		4805 Sep 15 09:44	0° $\text{♄}$	
morning rise	4799 Jul 15 08:53	10° $\text{♄}$ 17'58					
retrograde	4799 Oct 29 14:06	18° $\text{♄}$ 23'14		conjunction	4805 Sep 21 05:54	0° $\text{♄}$ 44'48	1°27'00
opposition	4800 Jan 05 21:19	14° $\text{♄}$ 55'08	-1°-27'-6	minimum elong	4805 Sep 21 05:51	0° $\text{♄}$ 44'47	1°27'01
min. Earth dist.	4800 Jan 05 18:22	14° $\text{♄}$ 55'44	8.24589 AU	max. Earth dist.	4805 Sep 21 06:24	0° $\text{♄}$ 44'57	10.19649 AU
direct	4800 Mar 12 17:26	11° $\text{♄}$ 30'11		morning rise	4805 Oct 09 02:49	3° $\text{♄}$ 01'01	
evening set	4800 Jun 23 00:24	19° $\text{♄}$ 21'16		retrograde	4806 Jan 20 00:59	10° $\text{♄}$ 56'33	
				opposition	4806 Mar 27 19:13	7° $\text{♄}$ 31'00	2°01'15
conjunction	4800 Jul 10 20:27	21° $\text{♄}$ 37'01	0°-57'-3	min. Earth dist.	4806 Mar 27 18:51	7° $\text{♄}$ 31'05	8.22295 AU
minimum elong	4800 Jul 10 20:29	21° $\text{♄}$ 37'02	0°57'04	direct	4806 Jun 03 21:15	4° $\text{♄}$ 02'18	
max. Earth dist.	4800 Jul 10 23:09	21° $\text{♄}$ 37'53	10.21784 AU	evening set	4806 Sep 17 19:34	12° $\text{♄}$ 07'21	



conjunction	4806 Oct 05 15:54	14°  22'37	1°46'52	conjunction	4812 Dec 22 07:25	1°  07'32	1°34'36
minimum elong	4806 Oct 05 15:51	14°  22'36	1°46'52	minimum elong	4812 Dec 22 07:27	1°  07'33	1°34'37
max. Earth dist.	4806 Oct 05 15:44	14°  22'34	10.25199 AU	max. Earth dist.	4812 Dec 22 05:19	1°  06'54	10.74907 AU
morning rise	4806 Oct 23 08:57	16°  36'55		morning rise	4813 Jan 08 04:23	3°  09'38	
retrograde	4807 Feb 02 14:12	24°  26'14		retrograde	4813 Apr 18 01:16	10°  21'48	
opposition	4807 Apr 10 10:37	21°  01'42	2°22'03	opposition	4813 Jun 25 21:56	7°  02'49	1°44'25
min. Earth dist.	4807 Apr 10 11:06	21°  01'36	8.28676 AU	min. Earth dist.	4813 Jun 25 23:54	7°  02'26	8.78648 AU
direct	4807 Jun 17 23:52	17°  33'11		direct	4813 Sep 04 15:01	3°  39'34	
evening set	4807 Oct 02 02:25	25°  34'53		evening set	4813 Dec 17 12:50	11°  03'48	
conjunction	4807 Oct 19 19:06	27°  48'06	2°00'36	conjunction	4814 Jan 03 11:10	13°  05'28	1°14'20
minimum elong	4807 Oct 19 19:04	27°  48'05	2°00'37	minimum elong	4814 Jan 03 11:12	13°  05'29	1°14'21
max. Earth dist.	4807 Oct 19 17:56	27°  47'44	10.32252 AU	max. Earth dist.	4814 Jan 03 08:39	13°  04'43	10.81999 AU
morning rise	4807 Nov 06 08:03	0°  00'11		morning rise	4814 Jan 20 06:39	15°  06'18	
	4807 Nov 06 07:28	0°  00'00		retrograde	4814 Apr 30 05:25	22°  01'50	
retrograde	4808 Feb 15 21:21	7°  04'42		opposition	4814 Jul 08 11:14	18°  05'33	1°17'28
opposition	4808 Apr 22 22:34	4°  01'19	2°34'49	min. Earth dist.	4814 Jul 08 12:44	18°  05'16	8.85103 AU
min. Earth dist.	4808 Apr 22 23:47	4°  01'18	8.36342 AU	direct	4814 Sep 17 07:52	15°  03'42	
direct	4808 Jun 30 23:14	0°  01'09		evening set	4814 Dec 29 13:13	22°  05'59	
evening set	4808 Oct 15 01:31	8°  04'01		conjunction	4815 Jan 15 09:51	24°  05'31	0°51'09
conjunction	4808 Nov 01 14:21	10°  05'02	2°07'44	minimum elong	4815 Jan 15 09:53	24°  05'32	0°51'10
minimum elong	4808 Nov 01 14:20	10°  05'02	2°07'45	max. Earth dist.	4815 Jan 15 07:59	24°  05'27	10.87803 AU
max. Earth dist.	4808 Nov 01 12:20	10°  05'24	10.40384 AU	morning rise	4815 Feb 01 04:07	26°  05'21	
morning rise	4808 Nov 18 23:13	13°  08'49			4815 Mar 01 09:03	0°  00'00	
	4808 Dec 04 11:16	15°  00'00		retrograde	4815 May 12 07:28	3°  05'56	
retrograde	4809 Feb 27 22:26	20°  04'21		opposition	4815 Jul 20 22:02	0°  04'14	0°47'37
opposition	4809 May 06 06:31	17°  02'55	2°39'16	min. Earth dist.	4815 Jul 20 22:51	0°  04'13	8.90152 AU
min. Earth dist.	4809 May 06 07:47	17°  02'40	8.44856 AU		4815 Jul 30 06:45	30°  00'00	
	4809 Jun 08 08:21	15°  00'00		direct	4815 Sep 29 18:27	27°  02'34	
direct	4809 Jul 14 18:29	13°  05'43			4815 Nov 27 08:51	0°  00'00	
	4809 Aug 19 21:13	15°  00'00		evening set	4816 Jan 10 09:22	4°  03'42	
evening set	4809 Oct 28 15:51	21°  04'52		conjunction	4816 Jan 27 04:33	6°  03'40	0°26'02
conjunction	4809 Nov 15 01:05	23°  05'41	2°08'14	minimum elong	4816 Jan 27 04:33	6°  03'40	0°26'03
minimum elong	4809 Nov 15 01:05	23°  05'41	2°08'14	max. Earth dist.	4816 Jan 27 03:34	6°  03'46	10.92090 AU
max. Earth dist.	4809 Nov 14 22:58	23°  05'35	10.49156 AU	morning rise	4816 Feb 12 21:52	8°  03'12	
morning rise	4809 Dec 02 06:09	26°  01'47			4816 Apr 25 10:05	15°  00'00	
	4810 Jan 06 16:02	0°  00'00		retrograde	4816 May 23 09:28	15°  03'56	
retrograde	4810 Mar 12 17:49	3°  03'30			4816 Jun 20 19:27	15°  00'00	
opposition	4810 May 19 10:16	0°  09'03	2°35'41	opposition	4816 Aug 01 07:32	12°  02'43	0°16'05
min. Earth dist.	4810 May 19 11:08	0°  08'53	8.53770 AU	min. Earth dist.	4816 Aug 01 08:10	12°  02'36	8.93609 AU
	4810 May 21 08:33	30°  00'00		direct	4816 Oct 11 02:17	9°  00'30	
direct	4810 Jul 28 08:40	26°  04'32			4817 Jan 10 19:52	15°  00'00	
	4810 Oct 01 05:58	0°  00'00		evening set	4817 Jan 21 02:30	16°  01'41	
evening set	4810 Nov 10 21:06	4°  02'47		conjunction	4817 Feb 06 20:20	18°  09'41	0°00'00
conjunction	4810 Nov 28 03:07	6°  03'30	2°02'26	minimum elong	4817 Feb 06 20:21	18°  09'41	0°00'01
minimum elong	4810 Nov 28 03:09	6°  03'31	2°02'26	behind sun begin	4817 Feb 06 17:00	18°  08'44	
max. Earth dist.	4810 Nov 28 01:37	6°  03'02	10.58118 AU	behind sun end	4817 Feb 06 23:42	18°  10'37	
morning rise	4810 Dec 15 04:53	8°  03'58		desc. node	4817 Feb 06 18:23	18°  09'09	
retrograde	4811 Mar 25 09:32	16°  01'21		max. Earth dist.	4817 Feb 06 19:13	18°  09'24	10.94704 AU
opposition	4811 Jun 01 09:54	12°  04'05	2°24'41	morning rise	4817 Feb 23 13:14	20°  08'24	
min. Earth dist.	4811 Jun 01 10:50	12°  04'03	8.62638 AU	retrograde	4817 Jun 04 12:00	27°  01'43	
direct	4811 Aug 10 16:24	9°  01'52		opposition	4817 Aug 13 16:11	23°  05'13	0°-15'-54
evening set	4811 Nov 23 17:57	16°  05'24		min. Earth dist.	4817 Aug 13 17:12	23°  05'02	8.95355 AU
				direct	4817 Oct 23 06:24	20°  03'43	
conjunction	4811 Dec 10 21:03	18°  05'30	1°50'57	evening set	4818 Feb 01 18:11	27°  04'23	
minimum elong	4811 Dec 10 21:05	18°  05'31	1°50'56	conjunction	4818 Feb 18 11:00	29°  04'01	0°-25'-57
max. Earth dist.	4811 Dec 10 19:36	18°  05'03	10.66831 AU	minimum elong	4818 Feb 18 10:59	29°  04'01	0°25'58
morning rise	4811 Dec 27 20:03	21°  01'08		max. Earth dist.	4818 Feb 18 09:31	29°  04'35	10.95554 AU
retrograde	4812 Apr 05 19:53	28°  01'53			4818 Feb 20 19:57	0°  00'00	
opposition	4812 Jun 13 05:36	24°  05'13	2°07'13	morning rise	4818 Mar 07 03:49	1°  04'39	
min. Earth dist.	4812 Jun 13 07:09	24°  05'56	8.71051 AU	retrograde	4818 Jun 16 13:04	8°  09'37	
direct	4812 Aug 22 17:30	21°  03'51		opposition	4818 Aug 26 00:27	5°  03'47	0°-47'-13
evening set	4812 Dec 05 06:55	29°  04'25		min. Earth dist.	4818 Aug 26 01:23	5°  03'37	8.95315 AU
	4812 Dec 13 00:27	0°  00'00					



direct	4818 Nov 04 09:20	2° <del>✕</del> 11'47			4825 Feb 21 22:29	15° <del>8</del>	
evening set	4819 Feb 13 09:36	9° <del>✕</del> 18'13		evening set	4825 Apr 25 00:28	21° <del>8</del> 07'52	
conjunction	4819 Mar 02 01:51	11° <del>✕</del> 16'47	0°-50'-50	conjunction	4825 May 12 01:14	23° <del>8</del> 13'30	-2°-8'-25
minimum elong	4819 Mar 02 01:50	11° <del>✕</del> 16'47	0°50'52	minimum elong	4825 May 12 01:15	23° <del>8</del> 13'30	2°08'28
max. Earth dist.	4819 Mar 02 01:00	11° <del>✕</del> 16'32	10.94586 AU	max. Earth dist.	4825 May 12 02:43	23° <del>8</del> 13'57	10.55787 AU
morning rise	4819 Mar 18 18:47	13° <del>✕</del> 15'35		morning rise	4825 May 29 06:05	25° <del>8</del> 20'26	
retrograde	4819 Jun 28 19:14	20° <del>✕</del> 26'37			4825 Jul 10 22:17	0° <del>II</del>	
opposition	4819 Sep 07 09:26	17° <del>✕</del> 07'07	-1°-16'-41	retrograde	4825 Sep 12 01:01	3° <del>II</del> 07'55	
min. Earth dist.	4819 Sep 07 09:29	17° <del>✕</del> 07'07	8.93452 AU		4825 Nov 16 22:19	30° <del>R</del> <del>8</del>	
direct	4819 Nov 16 12:45	13° <del>✕</del> 48'25		opposition	4825 Nov 20 19:09	29° <del>8</del> 41'53	-2°-35'-56
evening set	4820 Feb 25 02:00	20° <del>✕</del> 54'46		min. Earth dist.	4825 Nov 20 17:30	29° <del>8</del> 42'12	8.51297 AU
				direct	4826 Jan 27 11:55	26° <del>8</del> 20'15	
conjunction	4820 Mar 12 18:07	22° <del>✕</del> 53'37	-1°-13'-45		4826 Apr 04 02:31	0° <del>II</del>	
minimum elong	4820 Mar 12 18:05	22° <del>✕</del> 53'37	1°13'45	evening set	4826 May 08 00:07	3° <del>II</del> 49'55	
max. Earth dist.	4820 Mar 12 18:14	22° <del>✕</del> 53'39	10.91784 AU				
morning rise	4820 Mar 29 11:29	24° <del>✕</del> 52'55		conjunction	4826 May 25 04:44	5° <del>II</del> 57'49	-2°-2'-40
	4820 May 19 00:31	0° <del>Y</del>		minimum elong	4826 May 25 04:45	5° <del>II</del> 57'50	2°02'42
retrograde	4820 Jul 10 04:47	2° <del>Y</del> 08'10		max. Earth dist.	4826 May 25 05:59	5° <del>II</del> 58'13	10.46583 AU
	4820 Sep 02 08:18	30° <del>R</del> <del>✕</del>		morning rise	4826 Jun 11 13:44	8° <del>II</del> 07'07	
opposition	4820 Sep 18 19:51	28° <del>✕</del> 47'49	-1°-43'-11	retrograde	4826 Sep 25 16:29	16° <del>II</del> 01'01	
min. Earth dist.	4820 Sep 18 19:26	28° <del>✕</del> 47'54	8.89772 AU	opposition	4826 Dec 04 01:29	12° <del>II</del> 33'58	-2°-25'-9
direct	4820 Nov 27 13:39	25° <del>✕</del> 29'12		min. Earth dist.	4826 Dec 04 00:01	12° <del>II</del> 34'16	8.42180 AU
	4821 Feb 12 13:20	0° <del>Y</del>		direct	4827 Feb 09 09:57	9° <del>II</del> 11'14	
evening set	4821 Mar 07 20:59	2° <del>Y</del> 36'46		evening set	4827 May 21 07:37	16° <del>II</del> 47'16	
conjunction	4821 Mar 24 13:21	4° <del>Y</del> 36'14	-1°-33'-44	conjunction	4827 Jun 07 16:38	18° <del>II</del> 57'37	-1°-50'-37
minimum elong	4821 Mar 24 13:18	4° <del>Y</del> 36'14	1°33'45	minimum elong	4827 Jun 07 16:41	18° <del>II</del> 57'37	1°50'38
max. Earth dist.	4821 Mar 24 13:02	4° <del>Y</del> 36'09	10.87192 AU	max. Earth dist.	4827 Jun 07 17:50	18° <del>II</del> 57'59	10.37711 AU
morning rise	4821 Apr 10 07:47	6° <del>Y</del> 36'23		morning rise	4827 Jun 25 06:08	21° <del>II</del> 09'19	
retrograde	4821 Jul 22 17:02	13° <del>Y</del> 56'56		retrograde	4827 Oct 09 12:08	29° <del>II</del> 08'53	
opposition	4821 Oct 01 08:19	10° <del>Y</del> 35'36	-2°-5'-39	opposition	4827 Dec 17 11:46	25° <del>II</del> 40'59	-2°-6'-37
min. Earth dist.	4821 Oct 01 08:20	10° <del>Y</del> 35'36	8.84358 AU	min. Earth dist.	4827 Dec 17 10:32	25° <del>II</del> 41'14	8.33614 AU
direct	4821 Dec 09 16:23	7° <del>Y</del> 16'48		direct	4828 Feb 22 14:33	22° <del>II</del> 17'05	
evening set	4822 Mar 19 19:39	14° <del>Y</del> 26'55		evening set	4828 Jun 02 23:04	29° <del>II</del> 59'36	
					4828 Jun 03 00:23	0° <del>☾</del>	
conjunction	4822 Apr 05 12:53	16° <del>Y</del> 27'23	-1°-49'-58	conjunction	4828 Jun 20 12:52	2° <del>☾</del> 12'23	-1°-32'-33
minimum elong	4822 Apr 05 12:51	16° <del>Y</del> 27'23	1°49'59	minimum elong	4828 Jun 20 12:55	2° <del>☾</del> 12'24	1°32'34
max. Earth dist.	4822 Apr 05 11:52	16° <del>Y</del> 27'05	10.80963 AU	max. Earth dist.	4828 Jun 20 14:33	2° <del>☾</del> 12'55	10.29615 AU
morning rise	4822 Apr 22 09:05	18° <del>Y</del> 28'44		morning rise	4828 Jul 08 06:46	4° <del>☾</del> 26'26	
retrograde	4822 Aug 04 10:40	25° <del>Y</del> 55'29		retrograde	4828 Oct 22 12:16	12° <del>☾</del> 30'30	
opposition	4822 Oct 13 23:42	22° <del>Y</del> 33'04	-2°-23'-2	opposition	4828 Dec 30 01:35	9° <del>☾</del> 02'00	-1°-40'-57
min. Earth dist.	4822 Oct 14 00:06	22° <del>Y</del> 32'59	8.77434 AU	min. Earth dist.	4828 Dec 30 00:08	9° <del>☾</del> 02'18	8.26034 AU
direct	4822 Dec 21 21:56	19° <del>Y</del> 13'51		direct	4829 Mar 07 00:07	5° <del>☾</del> 36'56	
evening set	4823 Mar 31 23:02	26° <del>Y</del> 27'36		evening set	4829 Jun 16 22:35	13° <del>☾</del> 25'47	
conjunction	4823 Apr 17 17:58	28° <del>Y</del> 29'27	-2°-1'-36	conjunction	4829 Jul 04 16:55	15° <del>☾</del> 40'49	-1°-9'-11
minimum elong	4823 Apr 17 17:57	28° <del>Y</del> 29'26	2°01'38	minimum elong	4829 Jul 04 16:58	15° <del>☾</del> 40'50	1°09'12
max. Earth dist.	4823 Apr 17 17:33	28° <del>Y</del> 29'19	10.73394 AU	max. Earth dist.	4829 Jul 04 19:12	15° <del>☾</del> 41'33	10.22711 AU
	4823 Apr 30 04:24	0° <del>8</del>		morning rise	4829 Jul 22 14:37	17° <del>☾</del> 56'56	
morning rise	4823 May 04 16:24	0° <del>8</del> 32'21		retrograde	4829 Nov 05 15:53	26° <del>☾</del> 04'04	
retrograde	4823 Aug 17 09:01	8° <del>8</del> 05'54		opposition	4830 Jan 12 18:16	22° <del>☾</del> 35'15	-1°-9'-15
opposition	4823 Oct 26 18:25	4° <del>8</del> 42'16	-2°-34'-25	min. Earth dist.	4830 Jan 12 16:22	22° <del>☾</del> 35'38	8.19852 AU
min. Earth dist.	4823 Oct 26 18:16	4° <del>8</del> 42'18	8.69350 AU	direct	4830 Mar 20 14:47	19° <del>☾</del> 09'04	
direct	4824 Jan 03 06:46	1° <del>8</del> 22'26		evening set	4830 Jul 01 05:12	27° <del>☾</del> 03'49	
evening set	4824 Apr 12 08:21	8° <del>8</del> 40'46					
conjunction	4824 Apr 29 05:52	10° <del>8</del> 44'21	-2°-7'-57	conjunction	4830 Jul 19 03:23	29° <del>☾</del> 20'42	0°-41'-40
minimum elong	4824 Apr 29 05:51	10° <del>8</del> 44'21	2°07'59	minimum elong	4830 Jul 19 03:25	29° <del>☾</del> 20'43	0°41'41
max. Earth dist.	4824 Apr 29 06:41	10° <del>8</del> 44'36	10.64866 AU	max. Earth dist.	4830 Jul 19 06:08	29° <del>☾</del> 21'35	10.17390 AU
morning rise	4824 May 16 07:08	12° <del>8</del> 49'07			4830 Jul 24 05:59	0° <del>9</del>	
	4824 Jun 04 01:42	15° <del>8</del>		morning rise	4830 Aug 06 03:59	1° <del>9</del> 38'24	
retrograde	4824 Aug 29 13:30	20° <del>8</del> 29'43		retrograde	4830 Nov 19 21:05	9° <del>9</del> 47'04	
opposition	4824 Nov 07 16:48	17° <del>8</del> 04'50	-2°-38'-55	opposition	4831 Jan 26 13:28	6° <del>9</del> 18'12	0°-33'-13
min. Earth dist.	4824 Nov 07 15:42	17° <del>8</del> 05'02	8.60502 AU	min. Earth dist.	4831 Jan 26 11:10	6° <del>9</del> 18'41	8.15432 AU
	4824 Dec 06 18:13	15° <del>R</del> <del>8</del>		direct	4831 Apr 03 10:15	2° <del>9</del> 51'03	
direct	4825 Jan 14 19:56	13° <del>8</del> 44'11		evening set	4831 Jul 15 17:43	10° <del>9</del> 50'52	



conjunction	4831 Aug 02 18:37	13°♏09'03	0°-11'-32	direct	4837 Jun 25 01:50	25°♑11'24	
minimum elong	4831 Aug 02 18:38	13°♏09'03	0°11'33		4837 Sep 11 23:07	0°♌	
behind sun begin	4831 Aug 02 13:28	13°♏07'25		evening set	4837 Oct 09 05:38	3°♌11'06	
behind sun end	4831 Aug 02 23:48	13°♏10'42					
max. Earth dist.	4831 Aug 02 21:09	13°♏09'51	10.13973 AU	conjunction	4837 Oct 26 20:23	5°♌23'15	2°05'13
	4831 Aug 17 05:10	15°♏		minimum elong	4837 Oct 26 20:22	5°♌23'14	2°05'14
morning rise	4831 Aug 20 20:56	15°♏27'43		max. Earth dist.	4837 Oct 26 20:47	5°♌23'22	10.36556 AU
retrograde	4831 Dec 04 02:33	23°♏36'15		morning rise	4837 Nov 13 07:00	7°♌34'09	
asc. node	4831 Dec 21 22:03	23°♏18'51			4838 Feb 06 23:07	15°♌	
opposition	4832 Feb 09 10:16	20°♏07'39	0°05'03	retrograde	4838 Feb 22 14:51	15°♌13'24	
min. Earth dist.	4832 Feb 09 08:17	20°♏08'03	8.13050 AU		4838 Mar 10 06:39	11°♌50'49	2°38'06
direct	4832 Apr 16 09:31	16°♏39'40		opposition	4838 Apr 30 17:50	11°♌50'51	8.41052 AU
evening set	4832 Jul 29 10:41	24°♏43'30		min. Earth dist.	4838 Apr 30 17:42	11°♌50'51	8.41052 AU
				direct	4838 Jul 08 22:39	8°♌23'33	
conjunction	4832 Aug 16 12:53	27°♏02'17	0°19'28		4838 Oct 12 06:11	15°♌	
minimum elong	4832 Aug 16 12:52	27°♏02'16	0°19'28	evening set	4838 Oct 23 00:46	16°♌17'40	
max. Earth dist.	4832 Aug 16 14:38	27°♏02'50	10.12672 AU				
morning rise	4832 Sep 03 15:26	29°♏21'10		conjunction	4838 Nov 09 11:44	18°♌27'32	2°08'39
	4832 Sep 08 19:38	0°♐		minimum elong	4838 Nov 09 11:44	18°♌27'32	2°08'39
retrograde	4832 Dec 17 06:55	7°♐27'51		max. Earth dist.	4838 Nov 09 11:30	18°♌27'28	10.45433 AU
opposition	4833 Feb 22 07:32	3°♐59'50	0°43'09	morning rise	4838 Nov 26 18:23	20°♌36'08	
min. Earth dist.	4833 Feb 22 06:13	4°♐00'06	8.12864 AU	retrograde	4839 Mar 07 13:07	28°♌08'15	
direct	4833 Apr 30 11:24	0°♐31'16		opposition	4839 May 14 00:05	24°♌46'50	2°38'00
evening set	4833 Aug 13 05:41	8°♐37'44		min. Earth dist.	4839 May 14 01:03	24°♌46'38	8.50155 AU
				direct	4839 Jul 22 15:52	21°♌20'24	
conjunction	4833 Aug 31 07:41	10°♐56'20	0°49'19	evening set	4839 Nov 05 11:01	29°♌08'02	
minimum elong	4833 Aug 31 07:39	10°♐56'20	0°49'19		4839 Nov 12 13:17	0°♑	
max. Earth dist.	4833 Aug 31 08:36	10°♐56'38	10.13585 AU				
morning rise	4833 Sep 18 08:59	13°♐14'42		conjunction	4839 Nov 22 18:23	1°♑15'41	2°05'34
retrograde	4833 Dec 31 08:36	21°♐18'01		minimum elong	4839 Nov 22 18:24	1°♑15'41	2°05'34
opposition	4834 Mar 08 04:33	17°♐50'50	1°18'39	max. Earth dist.	4839 Nov 22 16:41	1°♑15'10	10.54626 AU
min. Earth dist.	4834 Mar 08 03:47	17°♐51'00	8.14902 AU	morning rise	4839 Dec 09 21:37	3°♑22'06	
direct	4834 May 14 16:19	14°♐21'59		retrograde	4840 Mar 19 06:00	10°♑47'28	
evening set	4834 Aug 28 00:04	22°♐29'24		opposition	4840 May 26 02:08	7°♑27'02	2°30'10
				min. Earth dist.	4840 May 26 03:43	7°♑26'44	8.59289 AU
conjunction	4834 Sep 15 00:30	24°♐47'07	1°16'12	direct	4840 Aug 04 04:00	4°♑01'33	
minimum elong	4834 Sep 15 00:27	24°♐47'06	1°16'12	evening set	4840 Nov 17 12:11	11°♑42'14	
max. Earth dist.	4834 Sep 15 00:52	24°♐47'13	10.16671 AU				
morning rise	4834 Oct 02 23:15	27°♐04'16		conjunction	4840 Dec 04 16:24	13°♑47'52	1°56'30
	4834 Oct 27 09:36	0°♑		minimum elong	4840 Dec 04 16:26	13°♑47'52	1°56'30
retrograde	4835 Jan 14 05:11	5°♑02'53		max. Earth dist.	4840 Dec 04 13:49	13°♑47'04	10.63589 AU
opposition	4835 Mar 22 00:06	1°♑36'44	1°49'22	morning rise	4840 Dec 21 16:43	15°♑52'18	
min. Earth dist.	4835 Mar 21 23:26	1°♑36'52	8.19045 AU	retrograde	4841 Mar 31 18:38	23°♑11'40	
	4835 Apr 11 14:25	30°♒♐		opposition	4841 Jun 08 00:04	19°♑52'05	2°15'25
direct	4835 May 28 21:54	28°♐07'54		min. Earth dist.	4841 Jun 08 01:47	19°♑51'45	8.67921 AU
	4835 Jul 14 12:42	0°♑		direct	4841 Aug 17 09:25	16°♑27'39	
evening set	4835 Sep 11 15:43	6°♑14'30		evening set	4841 Nov 30 05:02	24°♑01'27	
conjunction	4835 Sep 29 13:34	8°♑30'43	1°38'31	conjunction	4841 Dec 17 06:40	26°♑05'19	1°42'10
minimum elong	4835 Sep 29 13:31	8°♑30'42	1°38'32	minimum elong	4841 Dec 17 06:43	26°♑05'20	1°42'11
max. Earth dist.	4835 Sep 29 13:48	8°♑30'47	10.21749 AU	max. Earth dist.	4841 Dec 17 03:59	26°♑04'30	10.71836 AU
morning rise	4835 Oct 17 08:43	10°♑46'06		morning rise	4842 Jan 03 04:34	28°♑08'05	
retrograde	4836 Jan 27 21:00	18°♑38'55			4842 Jan 19 07:06	0°♑	
opposition	4836 Apr 03 17:10	15°♑13'56	2°13'31	retrograde	4842 Apr 13 03:10	5°♑22'29	
min. Earth dist.	4836 Apr 03 16:20	15°♑14'06	8.25037 AU	opposition	4842 Jun 20 18:14	2°♑03'35	1°54'48
direct	4836 Jun 11 01:52	11°♑45'24		min. Earth dist.	4842 Jun 20 19:58	2°♑03'15	8.75650 AU
evening set	4836 Sep 25 02:16	19°♑49'23			4842 Jul 19 22:16	30°♒♑	
				direct	4842 Aug 30 09:36	28°♑40'12	
conjunction	4836 Oct 12 20:47	22°♑03'41	1°55'06		4842 Oct 10 01:48	0°♑	
minimum elong	4836 Oct 12 20:44	22°♑03'41	1°55'06	evening set	4842 Dec 12 14:36	6°♑07'33	
max. Earth dist.	4836 Oct 12 21:11	22°♑03'49	10.28509 AU				
morning rise	4836 Oct 30 11:43	24°♑16'55		conjunction	4842 Dec 29 14:04	8°♑09'55	1°23'29
	4836 Dec 23 00:25	0°♒		minimum elong	4842 Dec 29 14:06	8°♑09'56	1°23'30
retrograde	4837 Feb 09 08:53	2°♒03'11		max. Earth dist.	4842 Dec 29 11:36	8°♑09'10	10.79039 AU
	4837 Mar 31 01:40	30°♒♑		morning rise	4843 Jan 15 10:05	10°♑11'20	
opposition	4837 Apr 17 07:20	28°♑39'24	2°29'57	retrograde	4843 Apr 25 09:45	17°♑21'54	
min. Earth dist.	4837 Apr 17 06:36	28°♑39'32	8.32517 AU	opposition	4843 Jul 03 09:26	14°♑03'28	1°29'30



min. Earth dist.	4843 Jul 03 11:45	14°♄03'02	8.82214 AU	morning rise	4849 Mar 24 21:54	20°♄12'41	
direct	4843 Sep 12 03:53	10°♄41'03		retrograde	4849 Jul 05 06:58	27°♄26'55	
evening set	4843 Dec 24 18:10	18°♄02'34		opposition	4849 Sep 13 22:39	24°♄06'16	-1°-32'-33
				min. Earth dist.	4849 Sep 13 23:35	24°♄06'06	8.88931 AU
conjunction	4844 Jan 10 15:36	20°♄03'42	1°01'24	direct	4849 Nov 22 20:00	20°♄46'55	
minimum elong	4844 Jan 10 15:38	20°♄03'42	1°01'25	evening set	4850 Mar 03 06:34	27°♄54'50	
max. Earth dist.	4844 Jan 10 12:31	20°♄02'46	10.84971 AU				
morning rise	4844 Jan 27 10:18	22°♄04'03		conjunction	4850 Mar 19 22:50	29°♄54'17	-1°-25'-48
retrograde	4844 May 06 12:33	29°♄11'58		minimum elong	4850 Mar 19 22:48	29°♄54'16	1°25'48
opposition	4844 Jul 14 22:08	25°♄53'45	1°00'43	max. Earth dist.	4850 Mar 19 22:03	29°♄54'03	10.86720 AU
min. Earth dist.	4844 Jul 15 00:58	25°♄53'13	8.87421 AU		4850 Mar 20 17:51	0°♄	
direct	4844 Sep 23 17:04	22°♄32'12		morning rise	4850 Apr 05 17:00	1°♄54'19	
evening set	4845 Jan 04 16:47	29°♄48'41		retrograde	4850 Jul 17 17:31	9°♄13'27	
	4845 Jan 06 07:19	0°♄		opposition	4850 Sep 26 10:29	5°♄51'52	-1°-56'-54
				min. Earth dist.	4850 Sep 26 10:26	5°♄51'52	8.84267 AU
conjunction	4845 Jan 21 12:30	1°♄48'49	0°36'58	direct	4850 Dec 05 00:03	2°♄32'27	
minimum elong	4845 Jan 21 12:31	1°♄48'49	0°36'59	evening set	4851 Mar 15 03:51	9°♄42'21	
max. Earth dist.	4845 Jan 21 08:56	1°♄47'45	10.89454 AU				
morning rise	4845 Feb 07 06:22	3°♄48'24		conjunction	4851 Mar 31 20:51	11°♄42'39	-1°-43'-44
retrograde	4845 May 18 13:48	10°♄54'58		minimum elong	4851 Mar 31 20:49	11°♄42'38	1°43'45
opposition	4845 Jul 27 08:51	7°♄36'40	0°29'42	max. Earth dist.	4851 Mar 31 21:23	11°♄42'48	10.81299 AU
min. Earth dist.	4845 Jul 27 11:29	7°♄36'11	8.91105 AU	morning rise	4851 Apr 17 16:14	13°♄43'42	
direct	4845 Oct 06 04:36	4°♄15'52		retrograde	4851 Jul 30 11:09	21°♄08'39	
evening set	4846 Jan 16 11:34	11°♄28'16		opposition	4851 Oct 09 01:01	17°♄46'03	-2°-16'-35
				min. Earth dist.	4851 Oct 08 23:52	17°♄46'16	8.78198 AU
conjunction	4846 Feb 02 06:04	13°♄27'41	0°11'11	direct	4851 Dec 17 04:18	14°♄26'27	
minimum elong	4846 Feb 02 06:04	13°♄27'41	0°11'11	evening set	4852 Mar 26 05:24	21°♄39'23	
behind sun begin	4846 Feb 02 00:50	13°♄26'08					
behind sun end	4846 Feb 02 11:18	13°♄29'14		conjunction	4852 Apr 11 23:41	23°♄40'51	-1°-57'-25
max. Earth dist.	4846 Feb 02 03:10	13°♄26'50	10.92334 AU	minimum elong	4852 Apr 11 23:40	23°♄40'51	1°57'25
	4846 Feb 15 04:12	15°♄		max. Earth dist.	4852 Apr 12 00:52	23°♄41'13	10.74590 AU
morning rise	4846 Feb 18 23:19	15°♄26'45		morning rise	4852 Apr 28 21:02	25°♄43'18	
retrograde	4846 May 30 16:26	22°♄33'18			4852 Jun 07 10:48	0°♄	
desc. node	4846 Jul 12 15:40	21°♄08'18		retrograde	4852 Aug 11 08:05	3°♄14'44	
opposition	4846 Aug 08 18:14	19°♄14'41	0°-2'-17		4852 Oct 18 19:56	30°♄	
min. Earth dist.	4846 Aug 08 19:49	19°♄14'23	8.93133 AU	opposition	4852 Oct 20 18:43	29°♄51'04	-2°-30'-35
direct	4846 Oct 18 11:40	15°♄54'29		min. Earth dist.	4852 Oct 20 17:07	29°♄51'22	8.70966 AU
evening set	4847 Jan 28 04:14	23°♄03'54		direct	4852 Dec 28 10:38	26°♄31'05	
					4853 Mar 04 02:41	0°♄	
conjunction	4847 Feb 13 21:43	25°♄02'53	0°-15'-1	evening set	4853 Apr 07 12:33	3°♄48'08	
minimum elong	4847 Feb 13 21:43	25°♄02'53	0°15'02				
behind sun begin	4847 Feb 13 18:59	25°♄02'04		conjunction	4853 Apr 24 08:51	5°♄51'08	-2°-6'-2
behind sun end	4847 Feb 14 00:27	25°♄03'41		minimum elong	4853 Apr 24 08:50	5°♄51'08	2°06'04
max. Earth dist.	4847 Feb 13 20:02	25°♄02'23	10.93498 AU	max. Earth dist.	4853 Apr 24 09:48	5°♄51'25	10.66878 AU
morning rise	4847 Mar 02 14:32	27°♄01'44		morning rise	4853 May 11 08:57	7°♄55'17	
	4847 Mar 29 13:46	0°♄			4853 Jul 29 11:05	15°♄	
retrograde	4847 Jun 11 19:11	4°♄09'33		retrograde	4853 Aug 24 10:10	15°♄33'33	
opposition	4847 Aug 21 03:03	0°♄50'26	0°-34'-7		4853 Sep 19 14:11	15°♄	
min. Earth dist.	4847 Aug 21 04:06	0°♄50'14	8.93435 AU	opposition	4853 Nov 02 15:52	12°♄08'51	-2°-38'00
	4847 Sep 01 13:08	30°♄		min. Earth dist.	4853 Nov 02 14:30	12°♄09'07	8.62883 AU
direct	4847 Oct 30 15:04	27°♄30'40		direct	4854 Jan 09 21:57	8°♄48'17	
	4847 Dec 25 21:31	0°♄			4854 Apr 10 05:34	15°♄	
evening set	4848 Feb 08 20:08	4°♄38'20		evening set	4854 Apr 20 02:05	16°♄10'19	
conjunction	4848 Feb 25 12:45	6°♄37'10	0°-40'-30	conjunction	4854 May 07 01:17	18°♄15'11	-2°-8'-59
minimum elong	4848 Feb 25 12:44	6°♄37'09	0°40'32	minimum elong	4854 May 07 01:18	18°♄15'12	2°09'01
max. Earth dist.	4848 Feb 25 11:16	6°♄36'43	10.92923 AU	max. Earth dist.	4854 May 07 02:44	18°♄15'38	10.58501 AU
morning rise	4848 Mar 13 05:35	8°♄36'05		morning rise	4854 May 24 04:44	20°♄21'21	
retrograde	4848 Jun 23 00:22	15°♄46'30		retrograde	4854 Sep 06 18:50	28°♄06'31	
opposition	4848 Sep 01 12:22	12°♄26'42	-1°-4'-35	opposition	4854 Nov 15 17:00	24°♄40'50	-2°-38'-8
min. Earth dist.	4848 Sep 01 13:24	12°♄26'31	8.92019 AU	min. Earth dist.	4854 Nov 15 15:20	24°♄41'09	8.54312 AU
direct	4848 Nov 10 17:54	9°♄07'13		direct	4855 Jan 22 13:16	21°♄19'33	
evening set	4849 Feb 19 12:24	16°♄14'23		evening set	4855 May 02 22:39	28°♄47'11	
					4855 May 12 19:16	0°♄	
conjunction	4849 Mar 08 04:32	18°♄13'21	-1°-4'-25				
minimum elong	4849 Mar 08 04:30	18°♄13'21	1°04'26	conjunction	4855 May 20 01:36	0°♄54'13	-2°-5'-48
max. Earth dist.	4849 Mar 08 02:51	18°♄12'51	10.90640 AU	minimum elong	4855 May 20 01:37	0°♄54'14	2°05'50



max. Earth dist.	4855 May 20 04:18	0°II55'04	10.49846 AU	minimum elong	4861 Aug 10 19:22	21°Ω34'05	0°06'49
morning rise	4855 Jun 06 08:51	3°II02'36		behind sun begin	4861 Aug 10 12:34	21°Ω31'56	
retrograde	4855 Sep 20 08:12	10°II54'22		behind sun end	4861 Aug 11 02:11	21°Ω36'15	
opposition	4855 Nov 28 22:10	7°II27'48	-2°-30'-31	max. Earth dist.	4861 Aug 10 20:47	21°Ω34'32	10.14630 AU
min. Earth dist.	4855 Nov 28 19:41	7°II28'17	8.45666 AU	morning rise	4861 Aug 28 21:57	23°Ω52'46	
direct	4856 Feb 04 10:13	4°II05'42			4861 Oct 24 23:32	0°Π	
evening set	4856 May 15 03:13	11°II39'24		retrograde	4861 Dec 11 19:00	1°Π59'50	
					4862 Jan 29 11:28	30°RΩ	
conjunction	4856 Jun 01 10:30	13°II48'47	-1°-56'-17	opposition	4862 Feb 16 23:06	28°Ω32'08	0°27'39
minimum elong	4856 Jun 01 10:32	13°II48'47	1°56'19	min. Earth dist.	4862 Feb 16 21:46	28°Ω32'24	8.14254 AU
max. Earth dist.	4856 Jun 01 14:19	13°II49'59	10.41343 AU	direct	4862 Apr 25 01:25	25°Ω04'21	
morning rise	4856 Jun 18 21:59	15°II59'31			4862 Jul 12 02:34	0°Π	
retrograde	4856 Oct 03 03:16	23°II57'09		evening set	4862 Aug 07 11:49	3°Π09'17	
opposition	4856 Dec 11 07:09	20°II29'50	-2°-15'-4				
min. Earth dist.	4856 Dec 11 03:53	20°II30'29	8.37379 AU	conjunction	4862 Aug 25 14:04	5°Π27'52	0°37'17
direct	4857 Feb 16 12:08	17°II06'49		minimum elong	4862 Aug 25 14:02	5°Π27'51	0°37'18
evening set	4857 May 28 15:55	24°II46'47		max. Earth dist.	4862 Aug 25 15:21	5°Π28'16	10.14391 AU
				morning rise	4862 Sep 12 15:55	7°Π46'20	
conjunction	4857 Jun 15 03:47	26°II58'33	-1°-40'-36	retrograde	4862 Dec 25 22:28	15°Π50'47	
minimum elong	4857 Jun 15 03:50	26°II58'34	1°40'37	opposition	4863 Mar 02 20:08	12°Π23'41	1°04'28
max. Earth dist.	4857 Jun 15 07:38	26°II59'46	10.33426 AU	min. Earth dist.	4863 Mar 02 18:53	12°Π23'56	8.15096 AU
morning rise	4857 Jul 02 19:41	29°II11'37		direct	4863 May 09 04:27	8°Π55'22	
	4857 Jul 09 09:37	0°Ω		evening set	4863 Aug 22 06:38	17°Π02'03	
retrograde	4857 Oct 17 03:24	7°Ω14'02					
opposition	4857 Dec 24 19:53	3°Ω46'12	-1°-52'-11	conjunction	4863 Sep 09 07:59	19°Π20'04	1°05'35
min. Earth dist.	4857 Dec 24 16:41	3°Ω46'50	8.29878 AU	minimum elong	4863 Sep 09 07:56	19°Π20'03	1°05'36
direct	4858 Mar 01 18:27	0°Ω22'09		max. Earth dist.	4863 Sep 09 08:57	19°Π20'23	10.16274 AU
evening set	4858 Jun 11 12:30	8°Ω08'17		morning rise	4863 Sep 27 07:43	21°Π37'39	
				retrograde	4864 Jan 08 21:40	29°Π37'59	
conjunction	4858 Jun 29 04:49	10°Ω22'19	-1°-19'-16	opposition	4864 Mar 15 16:14	26°Π11'40	1°37'23
minimum elong	4858 Jun 29 04:51	10°Ω22'20	1°19'18	min. Earth dist.	4864 Mar 15 15:28	26°Π11'49	8.18046 AU
max. Earth dist.	4858 Jun 29 08:10	10°Ω23'23	10.26499 AU	direct	4864 May 22 09:17	22°Π43'04	
morning rise	4858 Jul 17 00:52	12°Ω37'31			4864 Aug 29 07:09	0°Ω	
retrograde	4858 Oct 31 06:46	20°Ω43'21		evening set	4864 Sep 04 23:43	0°Ω49'44	
opposition	4859 Jan 07 11:49	17°Ω15'12	-1°-22'-47				
min. Earth dist.	4859 Jan 07 09:10	17°Ω15'44	8.23552 AU	conjunction	4864 Sep 22 22:47	3°Ω06'32	1°29'57
direct	4859 Mar 15 07:04	13°Ω50'04		minimum elong	4864 Sep 22 22:44	3°Ω06'31	1°29'58
evening set	4859 Jun 25 16:23	21°Ω42'02		max. Earth dist.	4864 Sep 22 23:00	3°Ω06'36	10.20194 AU
				morning rise	4864 Oct 10 19:19	5°Ω22'34	
conjunction	4859 Jul 13 12:47	23°Ω58'01	0°-53'-18	retrograde	4865 Jan 21 15:45	13°Ω17'33	
minimum elong	4859 Jul 13 12:49	23°Ω58'02	0°53'20	opposition	4865 Mar 29 10:18	9°Ω52'11	2°04'25
max. Earth dist.	4859 Jul 13 15:19	23°Ω58'50	10.20909 AU	min. Earth dist.	4865 Mar 29 10:30	9°Ω52'09	8.22941 AU
morning rise	4859 Jul 31 12:18	26°Ω14'58		direct	4865 Jun 05 13:31	6°Ω23'33	
	4859 Sep 01 12:55	0°Ω		evening set	4865 Sep 19 12:24	14°Ω28'24	
retrograde	4859 Nov 14 10:20	4°Ω22'41					
opposition	4860 Jan 21 06:07	0°Ω54'25	0°-48'-19	conjunction	4865 Oct 07 08:15	16°Ω43'27	1°49'01
min. Earth dist.	4860 Jan 21 04:18	0°Ω54'47	8.18700 AU	minimum elong	4865 Oct 07 08:12	16°Ω43'26	1°49'02
	4860 Feb 01 12:39	30°RΩ		max. Earth dist.	4865 Oct 07 07:21	16°Ω43'10	10.25926 AU
direct	4860 Mar 28 01:56	27°Ω28'14		morning rise	4865 Oct 25 00:55	18°Ω57'31	
	4860 May 20 23:06	0°Ω		retrograde	4866 Feb 04 04:35	26°Ω46'15	
evening set	4860 Jul 09 02:33	5°Ω25'28		opposition	4866 Apr 12 01:34	23°Ω21'54	2°24'10
				min. Earth dist.	4866 Apr 12 02:18	23°Ω21'45	8.29486 AU
conjunction	4860 Jul 27 02:14	7°Ω42'57	0°-24'-4	direct	4866 Jun 19 15:35	19°Ω53'30	
minimum elong	4860 Jul 27 02:15	7°Ω42'57	0°24'05	evening set	4866 Oct 03 18:26	27°Ω54'47	
max. Earth dist.	4860 Jul 27 03:58	7°Ω43'30	10.16885 AU		4866 Oct 20 10:02	0°Π	
morning rise	4860 Aug 14 04:03	10°Ω01'05					
	4860 Sep 27 06:30	15°Ω		conjunction	4866 Oct 21 10:39	0°Π07'47	2°01'53
retrograde	4860 Nov 27 14:38	18°Ω09'13		minimum elong	4866 Oct 21 10:37	0°Π07'46	2°01'53
	4861 Jan 30 05:31	15°RΩ		max. Earth dist.	4866 Oct 21 09:05	0°Π07'17	10.33129 AU
opposition	4861 Feb 03 02:09	14°Ω41'06	0°-10'-44	morning rise	4866 Nov 07 23:14	2°Π19'38	
min. Earth dist.	4861 Feb 03 00:51	14°Ω41'22	8.15521 AU	retrograde	4867 Feb 17 11:06	10°Π01'31	
direct	4861 Apr 11 00:30	11°Ω14'02		opposition	4867 Apr 25 13:08	6°Π38'13	2°35'48
asc. node	4861 May 19 23:35	12°Ω35'52		min. Earth dist.	4867 Apr 25 13:58	6°Π38'03	8.37280 AU
	4861 Jun 16 23:14	15°Ω		direct	4867 Jul 03 15:07	3°Π10'18	
evening set	4861 Jul 23 17:41	19°Ω15'42		evening set	4867 Oct 17 16:41	11°Π06'36	
conjunction	4861 Aug 10 19:22	21°Ω34'05	0°06'49	conjunction	4867 Nov 04 05:13	13°Π17'23	2°08'06



minimum elong	4867 Nov 04 05:12	13° <del>M</del> 17'23	2°08'06	minimum elong	4874 Jan 16 19:58	27° <del>3</del> 02'43	0°47'44
max. Earth dist.	4867 Nov 04 03:29	13° <del>M</del> 16'51	10.41370 AU	max. Earth dist.	4874 Jan 16 18:43	27° <del>3</del> 02'21	10.88471 AU
	4867 Nov 17 22:12	15° <del>M</del>		morning rise	4874 Feb 02 14:02	29° <del>3</del> 02'26	
morning rise	4867 Nov 21 13:41	15° <del>M</del> 26'57			4874 Feb 10 21:01	0° <del>≈</del>	
retrograde	4868 Mar 01 11:20	23° <del>M</del> 01'48		retrograde	4874 May 13 18:23	6° <del>≈</del> 08'41	
opposition	4868 May 07 20:35	19° <del>M</del> 39'32	2°39'08	opposition	4874 Jul 22 09:23	2° <del>≈</del> 50'25	0°43'17
min. Earth dist.	4868 May 07 21:12	19° <del>M</del> 39'24	8.45872 AU	min. Earth dist.	4874 Jul 22 10:14	2° <del>≈</del> 50'15	8.90735 AU
direct	4868 Jul 16 10:14	16° <del>M</del> 12'19			4874 Sep 05 21:37	30° <del>R</del> <del>3</del>	
evening set	4868 Oct 30 06:09	24° <del>M</del> 02'33		direct	4874 Oct 01 06:03	29° <del>3</del> 29'21	
					4874 Oct 26 07:16	0° <del>≈</del>	
conjunction	4868 Nov 16 15:08	26° <del>M</del> 11'08	2°07'42	evening set	4875 Jan 11 19:01	6° <del>≈</del> 42'37	
minimum elong	4868 Nov 16 15:09	26° <del>M</del> 11'08	2°07'42				
max. Earth dist.	4868 Nov 16 13:51	26° <del>M</del> 10'43	10.50198 AU	conjunction	4875 Jan 28 14:02	8° <del>≈</del> 42'08	0°22'27
morning rise	4868 Dec 03 19:48	28° <del>M</del> 18'26		minimum elong	4875 Jan 28 14:03	8° <del>≈</del> 42'08	0°22'28
	4868 Dec 18 02:01	0° <del>≈</del>		max. Earth dist.	4875 Jan 28 12:44	8° <del>≈</del> 41'45	10.92585 AU
retrograde	4869 Mar 14 07:29	5° <del>≈</del> 46'29		morning rise	4875 Feb 14 07:21	10° <del>≈</del> 41'11	
opposition	4869 May 20 23:59	2° <del>≈</del> 25'11	2°34'28		4875 Mar 27 10:40	15° <del>≈</del>	
min. Earth dist.	4869 May 21 00:43	2° <del>≈</del> 25'02	8.54812 AU	retrograde	4875 May 25 19:53	17° <del>≈</del> 46'42	
	4869 Jun 24 11:51	30° <del>R</del> <del>M</del>			4875 Jul 27 16:09	15° <del>R</del> <del>≈</del>	
direct	4869 Jul 29 22:49	28° <del>M</del> 58'51		opposition	4875 Aug 03 18:29	14° <del>≈</del> 28'27	0°11'39
	4869 Sep 03 01:16	0° <del>≈</del>		min. Earth dist.	4875 Aug 03 19:49	14° <del>≈</del> 28'12	8.94013 AU
evening set	4869 Nov 12 10:29	6° <del>≈</del> 42'19		direct	4875 Oct 13 12:21	11° <del>≈</del> 08'15	
				desc. node	4875 Dec 19 00:21	14° <del>≈</del> 30'19	
conjunction	4869 Nov 29 16:13	8° <del>≈</del> 48'49	2°01'04		4875 Dec 24 04:10	15° <del>≈</del>	
minimum elong	4869 Nov 29 16:15	8° <del>≈</del> 48'49	2°01'04	evening set	4876 Jan 23 11:50	18° <del>≈</del> 17'59	
max. Earth dist.	4869 Nov 29 15:04	8° <del>≈</del> 48'28	10.59163 AU				
morning rise	4869 Dec 16 17:38	10° <del>≈</del> 54'04		conjunction	4876 Feb 09 05:30	20° <del>≈</del> 16'53	0°-3'-40
retrograde	4870 Mar 26 22:27	18° <del>≈</del> 15'47		minimum elong	4876 Feb 09 05:29	20° <del>≈</del> 16'53	0°03'41
opposition	4870 Jun 02 23:14	14° <del>≈</del> 55'23	2°22'31	behind sun begin	4876 Feb 08 22:33	20° <del>≈</del> 14'51	
min. Earth dist.	4870 Jun 03 00:36	14° <del>≈</del> 55'07	8.63668 AU	behind sun end	4876 Feb 09 12:25	20° <del>≈</del> 18'56	
direct	4870 Aug 12 04:55	11° <del>≈</del> 30'03		max. Earth dist.	4876 Feb 09 03:37	20° <del>≈</del> 16'22	10.95010 AU
evening set	4870 Nov 25 06:25	19° <del>≈</del> 06'34		morning rise	4876 Feb 25 22:26	22° <del>≈</del> 15'34	
				retrograde	4876 Jun 05 20:08	29° <del>≈</del> 21'43	
conjunction	4870 Dec 12 09:12	21° <del>≈</del> 11'10	1°48'52	opposition	4876 Aug 15 02:50	26° <del>≈</del> 03'14	0°-20'-17
minimum elong	4870 Dec 12 09:14	21° <del>≈</del> 11'11	1°48'52	min. Earth dist.	4876 Aug 15 04:03	26° <del>≈</del> 03'01	8.95563 AU
max. Earth dist.	4870 Dec 12 07:17	21° <del>≈</del> 10'35	10.67843 AU	direct	4876 Oct 24 16:50	22° <del>≈</del> 43'44	
morning rise	4870 Dec 29 08:05	23° <del>≈</del> 14'38		evening set	4877 Feb 03 03:11	29° <del>≈</del> 51'07	
	4871 Mar 15 00:36	0° <del>3</del>			4877 Feb 04 09:37	0° <del>≈</del>	
retrograde	4871 Apr 08 06:21	0° <del>3</del> 30'46					
	4871 May 02 20:23	30° <del>R</del> <del>≈</del>		conjunction	4877 Feb 19 19:58	1° <del>≈</del> 49'42	0°-29'-27
opposition	4871 Jun 15 18:21	27° <del>≈</del> 11'11	2°04'15	minimum elong	4877 Feb 19 19:57	1° <del>≈</del> 49'42	0°29'28
min. Earth dist.	4871 Jun 15 20:18	27° <del>≈</del> 10'49	8.72028 AU	max. Earth dist.	4877 Feb 19 18:44	1° <del>≈</del> 49'20	10.95661 AU
direct	4871 Aug 25 07:40	23° <del>≈</del> 46'54		morning rise	4877 Mar 08 12:45	3° <del>≈</del> 48'17	
	4871 Nov 26 19:16	0° <del>3</del>		retrograde	4877 Jun 17 23:57	10° <del>≈</del> 56'24	
evening set	4871 Dec 07 18:33	1° <del>3</del> 16'41		opposition	4877 Aug 27 10:59	7° <del>≈</del> 37'27	0°-51'-22
				min. Earth dist.	4877 Aug 27 11:21	7° <del>≈</del> 37'23	8.95327 AU
conjunction	4871 Dec 24 18:47	3° <del>3</del> 19'36	1°31'56	direct	4877 Nov 05 20:53	4° <del>≈</del> 18'27	
minimum elong	4871 Dec 24 18:50	3° <del>3</del> 19'37	1°31'57	evening set	4878 Feb 14 18:27	11° <del>≈</del> 24'41	
max. Earth dist.	4871 Dec 24 16:12	3° <del>3</del> 18'49	10.75843 AU				
morning rise	4872 Jan 10 15:43	5° <del>3</del> 21'32		conjunction	4878 Mar 03 10:47	13° <del>≈</del> 23'16	0°-54'-5
retrograde	4872 Apr 19 12:28	12° <del>3</del> 33'10		minimum elong	4878 Mar 03 10:45	13° <del>≈</del> 23'16	0°54'07
opposition	4872 Jun 27 10:07	9° <del>3</del> 14'13	1°40'49	max. Earth dist.	4878 Mar 03 10:35	13° <del>≈</del> 23'13	10.94500 AU
min. Earth dist.	4872 Jun 27 11:47	9° <del>3</del> 13'54	8.79526 AU	morning rise	4878 Mar 20 03:39	15° <del>≈</del> 22'04	
direct	4872 Sep 06 04:42	5° <del>3</del> 51'04		retrograde	4878 Jun 30 06:05	22° <del>≈</del> 33'20	
evening set	4872 Dec 18 23:40	13° <del>3</del> 14'30		opposition	4878 Sep 08 19:56	19° <del>≈</del> 13'45	-1°-20'-27
				min. Earth dist.	4878 Sep 08 19:36	19° <del>≈</del> 13'48	8.93283 AU
conjunction	4873 Jan 04 21:53	15° <del>3</del> 16'02	1°11'13	direct	4878 Nov 17 21:33	15° <del>≈</del> 55'03	
minimum elong	4873 Jan 04 21:55	15° <del>3</del> 16'03	1°11'14	evening set	4879 Feb 26 11:07	23° <del>≈</del> 01'22	
max. Earth dist.	4873 Jan 04 19:47	15° <del>3</del> 15'24	10.82817 AU				
morning rise	4873 Jan 21 17:13	17° <del>3</del> 16'43		conjunction	4879 Mar 15 03:10	25° <del>≈</del> 00'14	-1°-16'-37
retrograde	4873 May 01 16:10	24° <del>3</del> 25'02		minimum elong	4879 Mar 15 03:08	25° <del>≈</del> 00'14	1°16'38
opposition	4873 Jul 09 22:57	21° <del>3</del> 06'30	1°13'25	max. Earth dist.	4879 Mar 15 03:04	25° <del>≈</del> 00'13	10.91535 AU
min. Earth dist.	4873 Jul 09 23:51	21° <del>3</del> 06'20	8.85844 AU	morning rise	4879 Mar 31 20:36	26° <del>≈</del> 59'34	
direct	4873 Sep 18 19:24	17° <del>3</del> 44'28			4879 Apr 28 01:46	0° <del>≈</del>	
evening set	4873 Dec 30 23:23	25° <del>3</del> 02'19		retrograde	4879 Jul 12 14:43	4° <del>≈</del> 15'10	
				opposition	4879 Sep 21 06:26	0° <del>≈</del> 54'44	-1°-46'-26
conjunction	4874 Jan 16 19:56	27° <del>3</del> 02'43	0°47'43	min. Earth dist.	4879 Sep 21 06:21	0° <del>≈</del> 54'45	8.89467 AU



	4879 Oct 03 15:11	30° $\mathbb{R}$		direct	4886 Feb 10 22:32	11° $\mathbb{I}$ 24'58	
direct	4879 Nov 29 23:15	27° $\mathbb{X}$ 36'05		evening set	4886 May 22 20:40	19° $\mathbb{I}$ 01'44	
	4880 Jan 23 14:11	0° $\mathbb{Y}$					
evening set	4880 Mar 09 06:20	4° $\mathbb{Y}$ 43'46		conjunction	4886 Jun 09 06:15	21° $\mathbb{I}$ 12'21	-1°-48'-29
				minimum elong	4886 Jun 09 06:17	21° $\mathbb{I}$ 12'22	1°48'31
conjunction	4880 Mar 25 22:38	6° $\mathbb{Y}$ 43'16	-1°-36'-8	max. Earth dist.	4886 Jun 09 07:29	21° $\mathbb{I}$ 12'45	10.36882 AU
minimum elong	4880 Mar 25 22:36	6° $\mathbb{Y}$ 43'16	1°36'08	morning rise	4886 Jun 26 20:11	23° $\mathbb{I}$ 24'20	
max. Earth dist.	4880 Mar 25 21:47	6° $\mathbb{Y}$ 43'01	10.86837 AU		4886 Aug 31 05:58	0° $\mathbb{S}$	
morning rise	4880 Apr 11 17:16	8° $\mathbb{Y}$ 43'29		retrograde	4886 Oct 11 02:06	1° $\mathbb{S}$ 24'27	
retrograde	4880 Jul 24 04:02	16° $\mathbb{Y}$ 04'26			4886 Nov 21 09:38	30° $\mathbb{R}$ $\mathbb{I}$	
opposition	4880 Oct 02 19:09	12° $\mathbb{Y}$ 43'01	-2°-8'-14	opposition	4886 Dec 19 00:45	27° $\mathbb{I}$ 56'34	-2°-3'-32
min. Earth dist.	4880 Oct 02 19:34	12° $\mathbb{Y}$ 42'56	8.83963 AU	min. Earth dist.	4886 Dec 18 23:33	27° $\mathbb{I}$ 56'49	8.32794 AU
direct	4880 Dec 11 02:29	9° $\mathbb{Y}$ 24'10		direct	4887 Feb 24 03:05	24° $\mathbb{I}$ 32'37	
evening set	4881 Mar 21 05:12	16° $\mathbb{Y}$ 34'27			4887 May 17 16:12	0° $\mathbb{S}$	
				evening set	4887 Jun 05 12:58	2° $\mathbb{S}$ 15'53	
conjunction	4881 Apr 06 22:34	18° $\mathbb{Y}$ 35'00	-1°-51'-45				
minimum elong	4881 Apr 06 22:32	18° $\mathbb{Y}$ 34'59	1°51'46	conjunction	4887 Jun 23 03:19	4° $\mathbb{S}$ 28'56	-1°-29'-41
max. Earth dist.	4881 Apr 06 21:48	18° $\mathbb{Y}$ 34'46	10.80519 AU	minimum elong	4887 Jun 23 03:22	4° $\mathbb{S}$ 28'57	1°29'42
morning rise	4881 Apr 23 18:55	20° $\mathbb{Y}$ 36'27		max. Earth dist.	4887 Jun 23 05:35	4° $\mathbb{S}$ 29'39	10.28827 AU
retrograde	4881 Aug 05 20:58	28° $\mathbb{Y}$ 03'41		morning rise	4887 Jul 10 21:33	6° $\mathbb{S}$ 43'14	
opposition	4881 Oct 15 10:40	24° $\mathbb{Y}$ 41'09	-2°-24'-50	retrograde	4887 Oct 25 03:27	14° $\mathbb{S}$ 47'48	
min. Earth dist.	4881 Oct 15 10:55	24° $\mathbb{Y}$ 41'06	8.76942 AU	opposition	4888 Jan 01 15:01	11° $\mathbb{S}$ 19'18	-1°-37'-1
direct	4881 Dec 23 08:22	21° $\mathbb{Y}$ 21'55		min. Earth dist.	4888 Jan 01 13:08	11° $\mathbb{S}$ 19'41	8.25286 AU
evening set	4882 Apr 02 09:07	28° $\mathbb{Y}$ 35'58		direct	4888 Mar 08 13:04	7° $\mathbb{S}$ 54'11	
	4882 Apr 13 23:47	0° $\mathbb{S}$		evening set	4888 Jun 18 13:21	15° $\mathbb{S}$ 43'46	
conjunction	4882 Apr 19 04:20	0° $\mathbb{S}$ 37'56	-2°-2'-42	conjunction	4888 Jul 06 08:11	17° $\mathbb{S}$ 59'03	-1°-5'-43
minimum elong	4882 Apr 19 04:19	0° $\mathbb{S}$ 37'56	2°02'44	minimum elong	4888 Jul 06 08:13	17° $\mathbb{S}$ 59'03	1°05'44
max. Earth dist.	4882 Apr 19 04:33	0° $\mathbb{S}$ 38'00	10.72837 AU	max. Earth dist.	4888 Jul 06 10:53	17° $\mathbb{S}$ 59'54	10.22024 AU
morning rise	4882 May 06 02:53	2° $\mathbb{S}$ 40'58		morning rise	4888 Jul 24 06:10	20° $\mathbb{S}$ 15'22	
retrograde	4882 Aug 18 20:46	10° $\mathbb{S}$ 15'05		retrograde	4888 Nov 07 07:01	28° $\mathbb{S}$ 22'52	
opposition	4882 Oct 28 05:30	6° $\mathbb{S}$ 51'22	-2°-35'-18	opposition	4889 Jan 14 08:09	24° $\mathbb{S}$ 54'04	-1°-4'-40
min. Earth dist.	4882 Oct 28 04:51	6° $\mathbb{S}$ 51'29	8.68737 AU	min. Earth dist.	4889 Jan 14 05:57	24° $\mathbb{S}$ 54'31	8.19231 AU
direct	4883 Jan 04 17:43	3° $\mathbb{S}$ 31'31		direct	4889 Mar 22 04:32	21° $\mathbb{S}$ 27'50	
evening set	4883 Apr 14 19:05	10° $\mathbb{S}$ 50'17		evening set	4889 Jul 02 20:52	29° $\mathbb{S}$ 23'15	
					4889 Jul 07 17:21	0° $\mathbb{Q}$	
conjunction	4883 May 01 16:50	12° $\mathbb{S}$ 54'02	-2°-8'-17	conjunction	4889 Jul 20 19:21	1° $\mathbb{Q}$ 40'20	0°-37'-47
minimum elong	4883 May 01 16:50	12° $\mathbb{S}$ 54'02	2°08'19	minimum elong	4889 Jul 20 19:23	1° $\mathbb{Q}$ 40'20	0°37'48
max. Earth dist.	4883 May 01 17:33	12° $\mathbb{S}$ 54'15	10.64191 AU	max. Earth dist.	4889 Jul 20 21:52	1° $\mathbb{Q}$ 41'08	10.16853 AU
morning rise	4883 May 18 18:21	14° $\mathbb{S}$ 58'59		morning rise	4889 Aug 07 20:12	3° $\mathbb{Q}$ 58'11	
	4883 May 18 21:43	15° $\mathbb{S}$		retrograde	4889 Nov 21 12:37	12° $\mathbb{Q}$ 07'02	
retrograde	4883 Sep 01 03:18	22° $\mathbb{S}$ 40'11		opposition	4890 Jan 28 03:44	8° $\mathbb{Q}$ 38'13	0°-28'-14
opposition	4883 Nov 10 04:21	19° $\mathbb{S}$ 15'16	-2°-38'-50	min. Earth dist.	4890 Jan 28 01:42	8° $\mathbb{Q}$ 38'38	8.14982 AU
min. Earth dist.	4883 Nov 10 03:12	19° $\mathbb{S}$ 15'29	8.59773 AU	direct	4890 Apr 05 00:01	5° $\mathbb{Q}$ 10'58	
direct	4884 Jan 17 05:19	15° $\mathbb{S}$ 54'37		evening set	4890 Jul 17 09:58	13° $\mathbb{Q}$ 11'22	
evening set	4884 Apr 26 11:51	23° $\mathbb{S}$ 18'51			4890 Jul 31 14:44	15° $\mathbb{Q}$	
conjunction	4884 May 13 12:52	25° $\mathbb{S}$ 24'41	-2°-7'-56	conjunction	4890 Aug 04 10:58	15° $\mathbb{Q}$ 29'40	0°-7'-29
minimum elong	4884 May 13 12:53	25° $\mathbb{S}$ 24'41	2°07'58	minimum elong	4890 Aug 04 10:58	15° $\mathbb{Q}$ 29'40	0°07'30
max. Earth dist.	4884 May 13 13:30	25° $\mathbb{S}$ 24'52	10.55018 AU	behind sun begin	4890 Aug 04 04:18	15° $\mathbb{Q}$ 27'33	
morning rise	4884 May 30 18:10	27° $\mathbb{S}$ 31'50		behind sun end	4890 Aug 04 17:37	15° $\mathbb{Q}$ 31'47	
	4884 Jun 20 22:17	0° $\mathbb{I}$		max. Earth dist.	4890 Aug 04 12:47	15° $\mathbb{Q}$ 30'14	10.13622 AU
retrograde	4884 Sep 13 13:52	5° $\mathbb{I}$ 19'57		morning rise	4890 Aug 22 13:24	17° $\mathbb{Q}$ 48'25	
opposition	4884 Nov 22 07:13	1° $\mathbb{I}$ 53'54	-2°-34'-50	asc. node	4890 Nov 03 14:27	25° $\mathbb{Q}$ 01'19	
min. Earth dist.	4884 Nov 22 06:11	1° $\mathbb{I}$ 54'07	8.50491 AU	retrograde	4890 Dec 05 18:20	25° $\mathbb{Q}$ 56'56	
	4884 Dec 18 02:23	30° $\mathbb{R}$ $\mathbb{S}$		opposition	4891 Feb 11 00:47	22° $\mathbb{Q}$ 28'23	0°10'07
direct	4885 Jan 28 22:51	28° $\mathbb{S}$ 32'14		min. Earth dist.	4891 Feb 10 23:22	22° $\mathbb{Q}$ 28'41	8.12806 AU
	4885 Mar 10 20:19	0° $\mathbb{I}$		direct	4891 Apr 18 23:42	19° $\mathbb{Q}$ 00'19	
evening set	4885 May 09 12:18	6° $\mathbb{I}$ 02'35		evening set	4891 Aug 01 03:11	27° $\mathbb{Q}$ 04'34	
conjunction	4885 May 26 17:19	8° $\mathbb{I}$ 10'44	-2°-1'-21	conjunction	4891 Aug 19 05:21	29° $\mathbb{Q}$ 23'21	0°23'29
minimum elong	4885 May 26 17:21	8° $\mathbb{I}$ 10'44	2°01'23	minimum elong	4891 Aug 19 05:19	29° $\mathbb{Q}$ 23'21	0°23'29
max. Earth dist.	4885 May 26 17:51	8° $\mathbb{I}$ 10'54	10.45764 AU	max. Earth dist.	4891 Aug 19 06:28	29° $\mathbb{Q}$ 23'43	10.12537 AU
morning rise	4885 Jun 13 02:52	10° $\mathbb{I}$ 20'16			4891 Aug 23 23:13	0° $\mathbb{P}$	
retrograde	4885 Sep 27 05:11	18° $\mathbb{I}$ 14'48		morning rise	4891 Sep 06 07:54	1° $\mathbb{P}$ 42'16	
opposition	4885 Dec 05 13:59	14° $\mathbb{I}$ 47'45	-2°-23'-1	retrograde	4891 Dec 19 22:17	9° $\mathbb{P}$ 48'45	
min. Earth dist.	4885 Dec 05 13:11	14° $\mathbb{I}$ 47'55	8.41344 AU				



opposition	4892 Feb 24 22:06	6° $\mathring{M}$ 20'47	0°48'00	retrograde	4898 Mar 09 00:30	0° $\mathring{Z}$ 21'56	
min. Earth dist.	4892 Feb 24 21:06	6° $\mathring{M}$ 20'59	8.12844 AU		4898 Mar 29 08:10	30° $\mathring{R}\mathring{M}$	
direct	4892 May 02 03:10	2° $\mathring{M}$ 52'08		opposition	4898 May 15 12:48	27° $\mathring{M}$ 00'35	2°37'18
evening set	4892 Aug 14 22:13	10° $\mathring{M}$ 58'49		min. Earth dist.	4898 May 15 13:40	27° $\mathring{M}$ 00'25	8.51073 AU
				direct	4898 Jul 24 06:02	23° $\mathring{M}$ 34'14	
conjunction	4892 Sep 02 00:06	13° $\mathring{M}$ 17'21	0°53'02		4898 Oct 26 14:23	0° $\mathring{Z}$	
minimum elong	4892 Sep 02 00:04	13° $\mathring{M}$ 17'21	0°53'02	evening set	4898 Nov 06 23:30	1° $\mathring{Z}$ 21'07	
max. Earth dist.	4892 Sep 02 00:50	13° $\mathring{M}$ 17'36	10.13671 AU				
morning rise	4892 Sep 20 01:14	15° $\mathring{M}$ 35'39		conjunction	4898 Nov 24 06:34	3° $\mathring{Z}$ 28'33	2°04'36
retrograde	4893 Jan 01 22:00	23° $\mathring{M}$ 38'36		minimum elong	4898 Nov 24 06:35	3° $\mathring{Z}$ 28'34	2°04'36
opposition	4893 Mar 09 18:57	20° $\mathring{M}$ 11'27	1°22'59	max. Earth dist.	4898 Nov 24 04:56	3° $\mathring{Z}$ 28'03	10.55592 AU
min. Earth dist.	4893 Mar 09 17:58	20° $\mathring{M}$ 11'40	8.15098 AU	morning rise	4898 Dec 11 09:35	5° $\mathring{Z}$ 34'45	
direct	4893 May 16 08:57	16° $\mathring{M}$ 42'33		retrograde	4899 Mar 21 17:15	12° $\mathring{Z}$ 59'26	
evening set	4893 Aug 29 16:27	24° $\mathring{M}$ 49'58		opposition	4899 May 28 14:19	9° $\mathring{Z}$ 39'05	2°28'28
				min. Earth dist.	4899 May 28 15:05	9° $\mathring{Z}$ 38'56	8.60297 AU
conjunction	4893 Sep 16 16:42	27° $\mathring{M}$ 07'33	1°19'23	direct	4899 Aug 06 16:58	6° $\mathring{Z}$ 13'43	
minimum elong	4893 Sep 16 16:39	27° $\mathring{M}$ 07'32	1°19'24	evening set	4899 Nov 19 23:47	13° $\mathring{Z}$ 53'33	
max. Earth dist.	4893 Sep 16 17:28	27° $\mathring{M}$ 07'47	10.16963 AU				
morning rise	4893 Oct 04 15:02	29° $\mathring{M}$ 24'32		conjunction	4899 Dec 07 03:51	15° $\mathring{Z}$ 58'59	1°54'47
	4893 Oct 09 08:48	0° $\mathring{Z}$		minimum elong	4899 Dec 07 03:53	15° $\mathring{Z}$ 58'59	1°54'47
retrograde	4894 Jan 15 18:32	7° $\mathring{Z}$ 22'41		max. Earth dist.	4899 Dec 07 02:13	15° $\mathring{Z}$ 58'29	10.64654 AU
opposition	4894 Mar 23 14:16	3° $\mathring{Z}$ 56'33	1°52'54	morning rise	4899 Dec 24 03:54	18° $\mathring{Z}$ 03'13	
min. Earth dist.	4894 Mar 23 12:58	3° $\mathring{Z}$ 56'49	8.19437 AU	retrograde	4900 Apr 03 05:00	25° $\mathring{Z}$ 21'52	
direct	4894 May 30 13:17	0° $\mathring{Z}$ 27'41		opposition	4900 Jun 10 11:40	22° $\mathring{Z}$ 02'21	2°12'53
evening set	4894 Sep 13 07:35	8° $\mathring{Z}$ 34'02		min. Earth dist.	4900 Jun 10 12:38	22° $\mathring{Z}$ 02'10	8.69026 AU
				direct	4900 Aug 19 22:16	18° $\mathring{Z}$ 38'02	
conjunction	4894 Oct 01 05:09	10° $\mathring{Z}$ 50'05	1°41'00	evening set	4900 Dec 02 15:44	26° $\mathring{Z}$ 10'53	
minimum elong	4894 Oct 01 05:06	10° $\mathring{Z}$ 50'04	1°41'01				
max. Earth dist.	4894 Oct 01 06:12	10° $\mathring{Z}$ 50'26	10.22227 AU	conjunction	4900 Dec 19 17:13	28° $\mathring{Z}$ 14'33	1°39'50
morning rise	4894 Oct 18 23:45	13° $\mathring{Z}$ 05'15		minimum elong	4900 Dec 19 17:16	28° $\mathring{Z}$ 14'33	1°39'50
retrograde	4895 Jan 29 11:21	20° $\mathring{Z}$ 57'30		max. Earth dist.	4900 Dec 19 15:27	28° $\mathring{Z}$ 14'00	10.72984 AU
opposition	4895 Apr 06 07:04	17° $\mathring{Z}$ 32'31	2°16'05		4901 Jan 03 05:34	0° $\mathring{Z}$	
min. Earth dist.	4895 Apr 06 05:54	17° $\mathring{Z}$ 32'45	8.25604 AU	morning rise	4901 Jan 05 14:52	0° $\mathring{Z}$ 17'06	
direct	4895 Jun 13 15:36	14° $\mathring{Z}$ 03'58		retrograde	4901 Apr 15 14:11	7° $\mathring{Z}$ 30'46	
evening set	4895 Sep 27 17:25	22° $\mathring{Z}$ 07'32		opposition	4901 Jun 23 05:25	4° $\mathring{Z}$ 11'57	1°51'35
				min. Earth dist.	4901 Jun 23 07:09	4° $\mathring{Z}$ 11'37	8.76807 AU
conjunction	4895 Oct 15 11:35	24° $\mathring{Z}$ 21'38	1°56'45	direct	4901 Sep 01 20:37	0° $\mathring{Z}$ 48'41	
minimum elong	4895 Oct 15 11:32	24° $\mathring{Z}$ 21'37	1°56'46	evening set	4901 Dec 15 00:22	8° $\mathring{Z}$ 15'03	
max. Earth dist.	4895 Oct 15 12:29	24° $\mathring{Z}$ 21'55	10.29150 AU				
morning rise	4895 Nov 02 02:01	26° $\mathring{Z}$ 34'38		conjunction	4901 Dec 31 23:34	10° $\mathring{Z}$ 17'14	1°20'39
	4895 Dec 01 09:12	0° $\mathring{M}$		minimum elong	4901 Dec 31 23:37	10° $\mathring{Z}$ 17'14	1°20'40
retrograde	4896 Feb 11 22:44	4° $\mathring{M}$ 20'13		max. Earth dist.	4901 Dec 31 21:01	10° $\mathring{Z}$ 16'27	10.80193 AU
opposition	4896 Apr 18 20:53	0° $\mathring{M}$ 56'28	2°31'26	morning rise	4902 Jan 17 19:30	12° $\mathring{Z}$ 18'27	
min. Earth dist.	4896 Apr 18 20:25	0° $\mathring{M}$ 56'34	8.33228 AU	retrograde	4902 Apr 27 18:38	19° $\mathring{Z}$ 28'22	
	4896 Apr 30 18:37	30° $\mathring{R}\mathring{Z}$		opposition	4902 Jul 05 20:03	16° $\mathring{Z}$ 10'00	1°25'46
direct	4896 Jun 26 15:46	27° $\mathring{Z}$ 28'28		min. Earth dist.	4902 Jul 05 22:49	16° $\mathring{Z}$ 09'29	8.83337 AU
	4896 Aug 21 04:39	0° $\mathring{M}$		direct	4902 Sep 14 13:59	12° $\mathring{Z}$ 47'45	
evening set	4896 Oct 10 20:06	5° $\mathring{M}$ 27'39		evening set	4902 Dec 27 03:09	20° $\mathring{Z}$ 08'23	
conjunction	4896 Oct 28 10:24	7° $\mathring{M}$ 39'34	2°05'59	conjunction	4903 Jan 13 00:21	22° $\mathring{Z}$ 09'19	0°58'13
minimum elong	4896 Oct 28 10:23	7° $\mathring{M}$ 39'33	2°06'00	minimum elong	4903 Jan 13 00:23	22° $\mathring{Z}$ 09'19	0°58'14
max. Earth dist.	4896 Oct 28 10:34	7° $\mathring{M}$ 39'37	10.37325 AU	max. Earth dist.	4903 Jan 12 20:40	22° $\mathring{Z}$ 08'12	10.86046 AU
morning rise	4896 Nov 14 20:38	9° $\mathring{M}$ 50'15		morning rise	4903 Jan 29 19:04	24° $\mathring{Z}$ 09'31	
	4897 Jan 01 10:31	15° $\mathring{M}$			4903 Mar 31 13:47	0° $\mathring{\approx}$	
retrograde	4897 Feb 24 02:24	17° $\mathring{M}$ 28'45		retrograde	4903 May 09 20:37	1° $\mathring{\approx}$ 16'56	
	4897 Apr 20 20:21	15° $\mathring{R}\mathring{M}$			4903 Jun 19 06:45	30° $\mathring{R}\mathring{Z}$	
opposition	4897 May 02 06:57	14° $\mathring{M}$ 06'16	2°38'28	opposition	4903 Jul 18 08:04	27° $\mathring{Z}$ 58'47	0°56'39
min. Earth dist.	4897 May 02 07:18	14° $\mathring{M}$ 06'12	8.41876 AU	min. Earth dist.	4903 Jul 18 10:53	27° $\mathring{Z}$ 58'16	8.88424 AU
direct	4897 Jul 10 13:33	10° $\mathring{M}$ 39'01		direct	4903 Sep 27 04:27	24° $\mathring{Z}$ 37'24	
	4897 Sep 23 15:39	15° $\mathring{M}$			4903 Dec 22 10:37	0° $\mathring{\approx}$	
evening set	4897 Oct 24 14:21	18° $\mathring{M}$ 32'30		evening set	4904 Jan 08 01:07	1° $\mathring{\approx}$ 53'09	
conjunction	4897 Nov 11 00:51	20° $\mathring{M}$ 42'08	2°08'31	conjunction	4904 Jan 24 20:46	3° $\mathring{\approx}$ 53'08	0°33'34
minimum elong	4897 Nov 11 00:51	20° $\mathring{M}$ 42'08	2°08'32	minimum elong	4904 Jan 24 20:47	3° $\mathring{\approx}$ 53'09	0°33'35
max. Earth dist.	4897 Nov 11 00:01	20° $\mathring{M}$ 41'52	10.46304 AU	max. Earth dist.	4904 Jan 24 17:23	3° $\mathring{\approx}$ 52'08	10.90375 AU
morning rise	4897 Nov 28 07:14	22° $\mathring{M}$ 50'30		morning rise	4904 Feb 10 14:33	5° $\mathring{\approx}$ 52'35	
	4898 Feb 16 21:13	0° $\mathring{Z}$		retrograde	4904 May 20 23:15	12° $\mathring{\approx}$ 58'49	



opposition	4904 Jul 29 18:24	9° $\approx$ 40'36	0°25'29	retrograde	4910 Aug 01 20:37	23° $\Upsilon$ 13'35	
min. Earth dist.	4904 Jul 29 20:27	9° $\approx$ 40'13	8.91923 AU	opposition	4910 Oct 11 10:23	19° $\Upsilon$ 50'52	-2°-18'-39
direct	4904 Oct 08 14:05	6° $\approx$ 19'59		min. Earth dist.	4910 Oct 11 09:40	19° $\Upsilon$ 51'01	8.77482 AU
evening set	4905 Jan 18 19:28	13° $\approx$ 31'46		direct	4910 Dec 19 11:31	16° $\Upsilon$ 31'13	
	4905 Jan 31 05:49	15° $\approx$		evening set	4911 Mar 29 14:02	23° $\Upsilon$ 44'35	
conjunction	4905 Feb 04 13:54	15° $\approx$ 31'05	0°07'44	conjunction	4911 Apr 15 08:22	25° $\Upsilon$ 46'12	-1°-58'-45
minimum elong	4905 Feb 04 13:54	15° $\approx$ 31'05	0°07'44	minimum elong	4911 Apr 15 08:20	25° $\Upsilon$ 46'11	1°58'46
behind sun begin	4905 Feb 04 07:35	15° $\approx$ 29'13		max. Earth dist.	4911 Apr 15 08:27	25° $\Upsilon$ 46'13	10.73760 AU
behind sun end	4905 Feb 04 20:14	15° $\approx$ 32'57		morning rise	4911 May 02 06:00	27° $\Upsilon$ 48'48	
max. Earth dist.	4905 Feb 04 11:36	15° $\approx$ 30'25	10.93044 AU		4911 May 21 06:09	0° $\delta$	
morning rise	4905 Feb 21 07:00	17° $\approx$ 30'04		retrograde	4911 Aug 14 17:51	5° $\delta$ 20'55	
desc. node	4905 May 26 05:32	24° $\approx$ 34'08		opposition	4911 Oct 24 04:29	1° $\delta$ 57'07	-2°-31'-50
retrograde	4905 Jun 02 01:05	24° $\approx$ 36'28		min. Earth dist.	4911 Oct 24 03:47	1° $\delta$ 57'16	8.70033 AU
opposition	4905 Aug 11 03:34	21° $\approx$ 17'54	0°-6'-31		4911 Nov 20 11:25	30° $\mathcal{R}\Upsilon$	
min. Earth dist.	4905 Aug 11 05:03	21° $\approx$ 17'38	8.93723 AU	direct	4911 Dec 31 20:05	28° $\Upsilon$ 37'01	
direct	4905 Oct 20 20:02	17° $\approx$ 57'52			4912 Feb 10 02:25	0° $\delta$	
evening set	4906 Jan 30 11:57	25° $\approx$ 06'52		evening set	4912 Apr 09 21:43	5° $\delta$ 54'38	
conjunction	4906 Feb 16 05:18	27° $\approx$ 05'46	0°-18'-25	conjunction	4912 Apr 26 18:14	7° $\delta$ 57'49	-2°-6'-40
minimum elong	4906 Feb 16 05:17	27° $\approx$ 05'46	0°18'26	minimum elong	4912 Apr 26 18:14	7° $\delta$ 57'49	2°06'42
max. Earth dist.	4906 Feb 16 03:12	27° $\approx$ 05'09	10.93967 AU	max. Earth dist.	4912 Apr 26 18:45	7° $\delta$ 57'59	10.65852 AU
morning rise	4906 Mar 04 22:06	29° $\approx$ 04'34		morning rise	4912 May 13 18:39	10° $\delta$ 02'12	
	4906 Mar 12 22:29	0° $\mathcal{H}$			4912 Jun 29 11:27	15° $\delta$	
retrograde	4906 Jun 14 04:35	6° $\mathcal{H}$ 12'24		retrograde	4912 Aug 26 21:09	17° $\delta$ 41'14	
opposition	4906 Aug 23 12:10	2° $\mathcal{H}$ 53'20	0°-38'-11		4912 Oct 26 14:05	15° $\mathcal{R}\delta$	
min. Earth dist.	4906 Aug 23 13:57	2° $\mathcal{H}$ 53'00	8.93776 AU	opposition	4912 Nov 05 02:08	14° $\delta$ 16'22	-2°-38'-21
	4906 Oct 09 15:27	30° $\mathcal{R}\approx$		min. Earth dist.	4912 Nov 05 01:10	14° $\delta$ 16'33	8.61773 AU
direct	4906 Nov 01 23:48	29° $\approx$ 33'41		direct	4913 Jan 12 07:29	10° $\delta$ 55'39	
	4906 Nov 25 01:39	0° $\mathcal{H}$			4913 Mar 24 09:10	15° $\delta$	
evening set	4907 Feb 11 03:44	6° $\mathcal{H}$ 41'07		evening set	4913 Apr 22 11:54	18° $\delta$ 18'21	
conjunction	4907 Feb 27 20:12	8° $\mathcal{H}$ 39'54	0°-43'-43	conjunction	4913 May 09 11:33	20° $\delta$ 23'28	-2°-8'-51
minimum elong	4907 Feb 27 20:11	8° $\mathcal{H}$ 39'54	0°43'45	minimum elong	4913 May 09 11:34	20° $\delta$ 23'28	2°08'54
max. Earth dist.	4907 Feb 27 17:46	8° $\mathcal{H}$ 39'11	10.93130 AU	max. Earth dist.	4913 May 09 13:22	20° $\delta$ 24'02	10.57316 AU
morning rise	4907 Mar 16 13:09	10° $\mathcal{H}$ 38'50		morning rise	4913 May 26 15:17	22° $\delta$ 29'53	
retrograde	4907 Jun 26 08:01	17° $\mathcal{H}$ 49'24			4913 Aug 22 13:42	0° $\Pi$	
opposition	4907 Sep 04 21:21	14° $\mathcal{H}$ 29'37	-1°-8'-21	retrograde	4913 Sep 09 05:51	0° $\Pi$ 15'52	
min. Earth dist.	4907 Sep 04 23:04	14° $\mathcal{H}$ 29'18	8.92091 AU		4913 Sep 27 00:36	30° $\mathcal{R}\delta$	
direct	4907 Nov 14 01:36	11° $\mathcal{H}$ 10'12		opposition	4913 Nov 18 03:43	26° $\delta$ 50'00	-2°-37'-31
evening set	4908 Feb 22 19:59	18° $\mathcal{H}$ 17'19		min. Earth dist.	4913 Nov 18 01:48	26° $\delta$ 50'22	8.53065 AU
				direct	4914 Jan 24 23:41	23° $\delta$ 28'33	
conjunction	4908 Mar 10 12:06	20° $\mathcal{H}$ 16'17	-1°-7'-19		4914 Apr 27 12:25	0° $\Pi$	
minimum elong	4908 Mar 10 12:04	20° $\mathcal{H}$ 16'16	1°07'20	evening set	4914 May 05 09:27	0° $\Pi$ 56'59	
max. Earth dist.	4908 Mar 10 10:17	20° $\mathcal{H}$ 15'45	10.90572 AU				
morning rise	4908 Mar 27 05:29	22° $\mathcal{H}$ 15'38		conjunction	4914 May 22 12:52	3° $\Pi$ 04'18	-2°-4'-52
retrograde	4908 Jul 07 15:19	29° $\mathcal{H}$ 30'13		minimum elong	4914 May 22 12:53	3° $\Pi$ 04'18	2°04'54
opposition	4908 Sep 16 07:38	26° $\mathcal{H}$ 09'32	-1°-35'-53	max. Earth dist.	4914 May 22 15:48	3° $\Pi$ 05'13	10.48546 AU
min. Earth dist.	4908 Sep 16 08:27	26° $\mathcal{H}$ 09'22	8.88728 AU	morning rise	4914 Jun 08 20:26	5° $\Pi$ 12'58	
direct	4908 Nov 25 05:32	22° $\mathcal{H}$ 50'12		retrograde	4914 Sep 22 20:37	13° $\Pi$ 05'34	
evening set	4909 Mar 05 14:17	29° $\mathcal{H}$ 58'13		opposition	4914 Dec 01 09:24	9° $\Pi$ 38'48	-2°-28'-54
	4909 Mar 05 20:19	0° $\Upsilon$		min. Earth dist.	4914 Dec 01 06:36	9° $\Pi$ 39'21	8.44330 AU
conjunction	4909 Mar 22 06:39	1° $\Upsilon$ 57'44	-1°-28'-17	direct	4915 Feb 06 20:54	6° $\Pi$ 16'30	
minimum elong	4909 Mar 22 06:37	1° $\Upsilon$ 57'43	1°28'17	evening set	4915 May 18 14:59	13° $\Pi$ 51'05	
max. Earth dist.	4909 Mar 22 06:20	1° $\Upsilon$ 57'38	10.86378 AU	conjunction	4915 Jun 04 22:40	16° $\Pi$ 00'47	-1°-54'-33
morning rise	4909 Apr 08 00:47	3° $\Upsilon$ 57'49		minimum elong	4915 Jun 04 22:42	16° $\Pi$ 00'47	1°54'35
retrograde	4909 Jul 20 04:25	11° $\Upsilon$ 17'26		max. Earth dist.	4915 Jun 05 02:01	16° $\Pi$ 01'50	10.39993 AU
opposition	4909 Sep 28 19:36	7° $\Upsilon$ 55'46	-1°-59'-40	morning rise	4915 Jun 22 10:36	18° $\Pi$ 11'49	
min. Earth dist.	4909 Sep 28 19:16	7° $\Upsilon$ 55'50	8.83799 AU	retrograde	4915 Oct 06 17:28	26° $\Pi$ 10'15	
direct	4909 Dec 07 08:23	4° $\Upsilon$ 36'22		opposition	4915 Dec 14 19:08	22° $\Pi$ 42'47	-2°-12'-28
evening set	4910 Mar 17 11:57	11° $\Upsilon$ 46'30		min. Earth dist.	4915 Dec 14 16:03	22° $\Pi$ 43'24	8.36027 AU
				direct	4916 Feb 19 22:19	19° $\Pi$ 19'33	
conjunction	4910 Apr 03 05:01	13° $\Upsilon$ 46'53	-1°-45'-42	evening set	4916 May 31 04:38	27° $\Pi$ 00'27	
minimum elong	4910 Apr 03 04:59	13° $\Upsilon$ 46'52	1°45'43				
max. Earth dist.	4910 Apr 03 05:11	13° $\Upsilon$ 46'56	10.80700 AU	conjunction	4916 Jun 17 16:54	29° $\Pi$ 12'32	-1°-38'-6
morning rise	4910 Apr 20 00:32	15° $\Upsilon$ 48'04		minimum elong	4916 Jun 17 16:56	29° $\Pi$ 12'33	1°38'07



max. Earth dist.	4916 Jun 17 19:55	29°II13'30	10.32104 AU	min. Earth dist.	4922 Mar 05 09:34	14°M44'09	8.15246 AU
	4916 Jun 23 22:58	0°S		direct	4922 May 11 19:40	11°M15'36	
morning rise	4916 Jul 05 09:21	1°S25'57		evening set	4922 Aug 24 23:16	19°M22'27	
retrograde	4916 Oct 19 17:52	9°S29'05					
opposition	4916 Dec 27 08:34	6°S01'07	-1°-48'-41	conjunction	4922 Sep 12 00:17	21°M40'22	1°08'59
min. Earth dist.	4916 Dec 27 05:55	6°S01'39	8.28596 AU	minimum elong	4922 Sep 12 00:15	21°M40'21	1°09'00
direct	4917 Mar 04 06:21	2°S36'51		max. Earth dist.	4922 Sep 12 00:53	21°M40'33	10.16545 AU
evening set	4917 Jun 14 02:20	10°S24'00		morning rise	4922 Sep 29 23:45	23°M57'49	
					4922 Nov 25 08:07	0°S	
conjunction	4917 Jul 01 19:06	12°S38'20	-1°-16'-7	retrograde	4923 Jan 11 12:17	1°S57'48	
minimum elong	4917 Jul 01 19:09	12°S38'21	1°16'08		4923 Feb 28 14:08	30°R	
max. Earth dist.	4917 Jul 01 22:00	12°S39'16	10.25293 AU	opposition	4923 Mar 19 06:47	28°M31'38	1°41'14
morning rise	4917 Jul 19 15:39	14°S53'50		min. Earth dist.	4923 Mar 19 06:30	28°M31'41	8.18440 AU
retrograde	4917 Nov 02 20:06	23°S00'17		direct	4923 May 26 00:11	25°M03'03	
opposition	4918 Jan 10 01:02	19°S32'03	-1°-18'-31		4923 Aug 13 01:22	0°S	
min. Earth dist.	4918 Jan 09 22:42	19°S32'32	8.22435 AU	evening set	4923 Sep 08 16:03	3°S09'43	
direct	4918 Mar 17 21:12	16°S06'46					
evening set	4918 Jun 28 07:15	23°S59'41		conjunction	4923 Sep 26 14:43	5°S26'22	1°32'43
				minimum elong	4923 Sep 26 14:40	5°S26'21	1°32'43
conjunction	4918 Jul 16 04:06	26°S15'57	0°-49'-38	max. Earth dist.	4923 Sep 26 14:15	5°S26'13	10.20691 AU
minimum elong	4918 Jul 16 04:08	26°S15'57	0°49'39	morning rise	4923 Oct 14 10:58	7°S42'14	
max. Earth dist.	4918 Jul 16 07:04	26°S16'54	10.19919 AU	retrograde	4924 Jan 25 06:08	15°S36'45	
morning rise	4918 Aug 03 03:55	28°S33'07		opposition	4924 Apr 01 00:37	12°S11'33	2°07'22
	4918 Aug 14 22:29	0°S		min. Earth dist.	4924 Apr 01 01:01	12°S11'28	8.23543 AU
retrograde	4918 Nov 17 00:18	6°S41'18		direct	4924 Jun 08 04:37	8°S43'00	
opposition	4919 Jan 23 19:57	3°S13'00	0°-43'-32	evening set	4924 Sep 22 04:16	16°S47'40	
min. Earth dist.	4919 Jan 23 17:40	3°S13'28	8.17862 AU				
	4919 Mar 16 04:07	30°R		conjunction	4924 Oct 09 23:43	19°S02'32	1°51'00
direct	4919 Mar 31 16:00	29°S46'43		minimum elong	4924 Oct 09 23:41	19°S02'31	1°51'00
	4919 Apr 16 01:52	0°S		max. Earth dist.	4924 Oct 09 22:30	19°S02'08	10.26613 AU
evening set	4919 Jul 12 18:13	7°S44'41		morning rise	4924 Oct 27 16:03	21°S16'24	
				retrograde	4925 Feb 06 17:57	29°S04'34	
conjunction	4919 Jul 30 18:15	10°S02'22	0°-20'-5	opposition	4925 Apr 14 15:36	25°S40'24	2°26'04
minimum elong	4919 Jul 30 18:16	10°S02'22	0°20'06	min. Earth dist.	4925 Apr 14 15:59	25°S40'19	8.30254 AU
max. Earth dist.	4919 Jul 30 21:09	10°S03'17	10.16225 AU	direct	4925 Jun 22 07:22	22°S12'08	
morning rise	4919 Aug 17 20:09	12°S20'38			4925 Oct 04 15:12	0°M	
	4919 Sep 08 20:02	15°S		evening set	4925 Oct 06 09:37	0°M13'03	
retrograde	4919 Dec 01 06:00	20°S28'58					
opposition	4920 Feb 06 16:23	17°S00'49	0°-5'-43	conjunction	4925 Oct 24 01:30	2°M25'50	2°02'59
min. Earth dist.	4920 Feb 06 14:10	17°S01'17	8.15048 AU	minimum elong	4925 Oct 24 01:28	2°M25'49	2°03'00
	4920 Mar 04 00:19	15°R		max. Earth dist.	4925 Oct 24 00:22	2°M25'28	10.33964 AU
asc. node	4920 Apr 03 01:27	13°S39'50		morning rise	4925 Nov 10 13:38	4°M37'28	
direct	4920 Apr 13 14:24	13°S33'39		retrograde	4926 Feb 19 23:41	12°M18'47	
	4920 May 23 16:47	15°S		opposition	4926 Apr 28 02:54	8°M55'39	2°36'36
evening set	4920 Jul 26 10:01	21°S35'50		min. Earth dist.	4926 Apr 28 03:06	8°M55'37	8.38174 AU
				direct	4926 Jul 06 06:33	5°M27'54	
conjunction	4920 Aug 13 11:54	23°S54'19	0°10'50	evening set	4926 Oct 20 07:02	13°M23'39	
minimum elong	4920 Aug 13 11:53	23°S54'19	0°10'51		4926 Nov 02 05:54	15°M	
behind sun begin	4920 Aug 13 06:23	23°S52'33					
behind sun end	4920 Aug 13 17:23	23°S56'04		conjunction	4926 Nov 06 19:18	15°M34'14	2°08'19
max. Earth dist.	4920 Aug 13 14:16	23°S55'04	10.14336 AU	minimum elong	4926 Nov 06 19:17	15°M34'14	2°08'19
morning rise	4920 Aug 31 14:23	26°S13'01		max. Earth dist.	4926 Nov 06 18:25	15°M33'57	10.42317 AU
	4920 Oct 02 17:29	0°M		morning rise	4926 Nov 24 03:18	17°M43'33	
retrograde	4920 Dec 14 11:00	4°M20'00		retrograde	4927 Mar 05 01:23	25°M17'48	
opposition	4921 Feb 19 13:29	0°M52'19	0°32'36	opposition	4927 May 11 09:59	21°M55'41	2°38'50
min. Earth dist.	4921 Feb 19 11:41	0°M52'41	8.14124 AU	min. Earth dist.	4927 May 11 10:25	21°M55'36	8.46853 AU
	4921 Mar 02 07:55	30°R		direct	4927 Jul 19 23:19	18°M28'39	
direct	4921 Apr 27 15:49	27°S24'28		evening set	4927 Nov 02 19:43	26°M18'12	
	4921 Jun 21 12:42	0°M					
evening set	4921 Aug 10 04:31	5°M29'46		conjunction	4927 Nov 20 04:26	28°M26'35	2°07'03
				minimum elong	4927 Nov 20 04:26	28°M26'36	2°07'03
conjunction	4921 Aug 28 06:42	7°M48'19	0°41'08	max. Earth dist.	4927 Nov 20 03:31	28°M26'18	10.51210 AU
minimum elong	4921 Aug 28 06:40	7°M48'18	0°41'08		4927 Dec 02 18:25	0°S	
max. Earth dist.	4921 Aug 28 08:13	7°M48'48	10.14404 AU	morning rise	4927 Dec 07 08:43	0°S33'41	
morning rise	4921 Sep 15 08:19	10°M06'45		retrograde	4928 Mar 16 20:20	8°S01'02	
retrograde	4921 Dec 28 13:34	18°M10'56		opposition	4928 May 23 13:01	4°S39'55	2°33'08
opposition	4922 Mar 05 10:41	14°M43'55	1°09'01	min. Earth dist.	4928 May 23 14:13	4°S39'41	8.55836 AU



direct	4928 Aug 01 11:28	1°♏13'44		desc. node	4934 Oct 31 06:07	13°♏25'52	
evening set	4928 Nov 14 23:17	8°♏56'27			4934 Dec 02 02:29	15°♏	
				evening set	4935 Jan 25 20:25	20°♏23'36	
conjunction	4928 Dec 02 04:39	11°♏02'45	1°59'37				
minimum elong	4928 Dec 02 04:40	11°♏02'45	1°59'37	conjunction	4935 Feb 11 14:01	22°♏22'24	0°-7'-11
max. Earth dist.	4928 Dec 02 03:03	11°♏02'15	10.60191 AU	minimum elong	4935 Feb 11 14:01	22°♏22'24	0°07'13
morning rise	4928 Dec 19 05:52	13°♏07'49		behind sun begin	4935 Feb 11 07:34	22°♏20'30	
retrograde	4929 Mar 29 08:39	20°♏28'51		behind sun end	4935 Feb 11 20:28	22°♏24'18	
opposition	4929 Jun 05 11:50	17°♏08'36	2°20'16	max. Earth dist.	4935 Feb 11 12:13	22°♏21'53	10.95368 AU
min. Earth dist.	4929 Jun 05 13:36	17°♏08'15	8.64687 AU	morning rise	4935 Feb 28 06:57	24°♏21'01	
direct	4929 Aug 14 19:08	13°♏43'23			4935 Apr 27 20:24	0°♏	
evening set	4929 Nov 27 18:17	21°♏19'06		retrograde	4935 Jun 09 05:45	1°♏27'05	
					4935 Jul 22 22:29	30°♏	
conjunction	4929 Dec 14 20:45	23°♏23'30	1°46'44	opposition	4935 Aug 18 12:50	28°♏08'31	0°-24'-33
minimum elong	4929 Dec 14 20:47	23°♏23'31	1°46'44	min. Earth dist.	4935 Aug 18 13:33	28°♏08'23	8.95827 AU
max. Earth dist.	4929 Dec 14 18:23	23°♏22'47	10.68847 AU	direct	4935 Oct 28 04:03	24°♏49'01	
morning rise	4929 Dec 31 19:32	25°♏26'47			4936 Jan 20 08:12	0°♏	
	4930 Feb 12 10:55	0°♏		evening set	4936 Feb 06 11:33	1°♏56'02	
retrograde	4930 Apr 10 17:42	2°♏42'19					
	4930 Jun 10 02:28	30°♏		conjunction	4936 Feb 23 04:21	3°♏54'34	0°-32'-50
opposition	4930 Jun 18 06:28	29°♏22'48	2°01'14	minimum elong	4936 Feb 23 04:20	3°♏54'34	0°32'52
min. Earth dist.	4930 Jun 18 08:05	29°♏22'29	8.73002 AU	max. Earth dist.	4936 Feb 23 03:47	3°♏54'24	10.95827 AU
direct	4930 Aug 27 21:01	25°♏58'38		morning rise	4936 Mar 10 21:01	5°♏53'07	
	4930 Nov 08 22:53	0°♏		retrograde	4936 Jun 20 09:54	13°♏01'16	
evening set	4930 Dec 10 05:25	3°♏27'33		opposition	4936 Aug 29 20:56	9°♏42'14	0°-55'-23
				min. Earth dist.	4936 Aug 29 20:51	9°♏42'15	8.95399 AU
conjunction	4930 Dec 27 05:34	5°♏30'20	1°29'14	direct	4936 Nov 08 05:30	6°♏23'16	
minimum elong	4930 Dec 27 05:36	5°♏30'20	1°29'15	evening set	4937 Feb 17 02:45	13°♏29'16	
max. Earth dist.	4930 Dec 27 03:20	5°♏29'39	10.76782 AU				
morning rise	4931 Jan 13 02:21	7°♏32'06		conjunction	4937 Mar 05 18:59	15°♏27'48	0°-57'-13
retrograde	4931 Apr 22 22:59	14°♏43'10		minimum elong	4937 Mar 05 18:57	15°♏27'48	0°57'14
opposition	4931 Jun 30 21:39	11°♏24'14	1°37'12	max. Earth dist.	4937 Mar 05 18:47	15°♏27'45	10.94481 AU
min. Earth dist.	4931 Jun 30 22:39	11°♏24'02	8.80408 AU	morning rise	4937 Mar 22 11:52	17°♏26'36	
direct	4931 Sep 09 16:20	8°♏01'10		retrograde	4937 Jul 02 15:33	24°♏38'05	
evening set	4931 Dec 22 09:51	15°♏23'48		opposition	4937 Sep 11 05:54	21°♏18'24	-1°-24'-4
				min. Earth dist.	4937 Sep 11 05:51	21°♏18'24	8.93184 AU
conjunction	4932 Jan 08 08:01	17°♏25'11	1°08'05	direct	4937 Nov 20 06:37	17°♏59'42	
minimum elong	4932 Jan 08 08:03	17°♏25'12	1°08'07	evening set	4938 Feb 28 19:34	25°♏05'58	
max. Earth dist.	4932 Jan 08 06:39	17°♏24'46	10.83644 AU				
morning rise	4932 Jan 25 03:09	19°♏25'43		conjunction	4938 Mar 17 11:31	27°♏04'51	-1°-19'-22
retrograde	4932 May 04 02:17	26°♏33'34		minimum elong	4938 Mar 17 11:29	27°♏04'50	1°19'22
opposition	4932 Jul 12 10:02	23°♏15'02	1°09'23	max. Earth dist.	4938 Mar 17 10:42	27°♏04'36	10.91364 AU
min. Earth dist.	4932 Jul 12 10:56	23°♏14'52	8.86601 AU	morning rise	4938 Apr 03 05:07	29°♏04'12	
direct	4932 Sep 21 06:58	19°♏53'03			4938 Apr 11 06:05	0°♏	
evening set	4933 Jan 02 08:58	27°♏10'11		retrograde	4938 Jul 15 00:27	6°♏20'05	
				opposition	4938 Sep 23 16:17	2°♏59'36	-1°-49'-31
conjunction	4933 Jan 19 05:21	29°♏10'26	0°44'19	min. Earth dist.	4938 Sep 23 16:44	2°♏59'31	8.89238 AU
minimum elong	4933 Jan 19 05:22	29°♏10'27	0°44'20		4938 Nov 12 18:13	30°♏	
max. Earth dist.	4933 Jan 19 03:59	29°♏10'02	10.89159 AU	direct	4938 Dec 02 08:22	29°♏40'56	
	4933 Jan 26 02:58	0°♏			4938 Dec 21 18:30	0°♏	
morning rise	4933 Feb 04 23:22	1°♏10'02		evening set	4939 Mar 12 14:55	6°♏48'42	
retrograde	4933 May 16 04:45	8°♏15'55					
opposition	4933 Jul 24 20:13	4°♏57'37	0°39'00	conjunction	4939 Mar 29 07:16	8°♏48'14	-1°-38'-22
min. Earth dist.	4933 Jul 24 21:35	4°♏57'22	8.91349 AU	minimum elong	4939 Mar 29 07:14	8°♏48'14	1°38'23
direct	4933 Oct 03 16:09	1°♏36'36		max. Earth dist.	4939 Mar 29 06:35	8°♏48'02	10.86559 AU
evening set	4934 Jan 14 04:01	8°♏49'12		morning rise	4939 Apr 15 02:01	10°♏48'30	
				retrograde	4939 Jul 27 12:49	18°♏09'51	
conjunction	4934 Jan 30 22:50	10°♏48'37	0°18'55	opposition	4939 Oct 06 05:03	14°♏48'21	-2°-10'-38
minimum elong	4934 Jan 30 22:51	10°♏48'37	0°18'55	min. Earth dist.	4939 Oct 06 05:13	14°♏48'19	8.83653 AU
max. Earth dist.	4934 Jan 30 20:52	10°♏48'02	10.93119 AU	direct	4939 Dec 14 11:55	11°♏29'30	
morning rise	4934 Feb 16 16:14	12°♏47'35		evening set	4940 Mar 23 13:59	18°♏39'56	
	4934 Mar 08 07:32	15°♏					
retrograde	4934 May 28 03:53	19°♏52'52		conjunction	4940 Apr 09 07:32	20°♏40'33	-1°-53'-24
opposition	4934 Aug 06 04:54	16°♏34'33	0°07'18	minimum elong	4940 Apr 09 07:30	20°♏40'32	1°53'25
min. Earth dist.	4934 Aug 06 06:26	16°♏34'16	8.94463 AU	max. Earth dist.	4940 Apr 09 07:38	20°♏40'35	10.80174 AU
	4934 Aug 28 06:35	15°♏		morning rise	4940 Apr 26 03:55	22°♏42'03	
direct	4934 Oct 15 22:49	13°♏14'21			4940 Jul 25 08:08	0°♏	



retrograde	4940 Aug 08 07:54	0°♄09'44		retrograde	4946 Oct 27 16:10	17°♄01'25	
	4940 Aug 22 09:28	30°♄09'44		opposition	4947 Jan 04 02:52	13°♄32'58	-1°-33'-9
opposition	4940 Oct 17 20:41	26°♄47'08	-2°-26'-27	min. Earth dist.	4947 Jan 04 00:47	13°♄33'23	8.24726 AU
min. Earth dist.	4940 Oct 17 20:15	26°♄47'12	8.76569 AU	direct	4947 Mar 12 00:46	10°♄07'49	
direct	4940 Dec 25 18:22	23°♄27'55		evening set	4947 Jun 22 02:32	17°♄57'58	
	4941 Mar 29 19:36	0°♄					
evening set	4941 Apr 04 18:19	0°♄42'10		conjunction	4947 Jul 09 21:38	20°♄13'27	-1°-2'-21
				minimum elong	4947 Jul 09 21:41	20°♄13'28	1°02'22
conjunction	4941 Apr 21 13:43	2°♄44'15	-2°-3'-40	max. Earth dist.	4947 Jul 09 23:52	20°♄14'10	10.21516 AU
minimum elong	4941 Apr 21 13:42	2°♄44'14	2°03'41	morning rise	4947 Jul 27 19:57	22°♄29'57	
max. Earth dist.	4941 Apr 21 14:08	2°♄44'23	10.72424 AU		4947 Oct 15 05:34	0°♄	
morning rise	4941 May 08 12:26	4°♄47'23		retrograde	4947 Nov 10 20:54	0°♄37'41	
retrograde	4941 Aug 21 08:43	12°♄21'56			4947 Dec 07 12:53	30°♄08'55	
opposition	4941 Oct 30 15:40	8°♄58'12	-2°-36'-2	opposition	4948 Jan 17 20:24	27°♄08'55	-1°00'-14
min. Earth dist.	4941 Oct 30 14:53	8°♄58'21	8.68286 AU	min. Earth dist.	4948 Jan 17 18:33	27°♄09'17	8.18778 AU
direct	4942 Jan 07 01:49	5°♄38'22		direct	4948 Mar 24 15:26	23°♄42'36	
evening set	4942 Apr 17 04:49	12°♄57'29			4948 Jun 22 01:46	0°♄	
	4942 May 03 22:19	15°♄		evening set	4948 Jul 05 10:40	1°♄38'33	
conjunction	4942 May 04 02:45	15°♄01'22	-2°-8'-29	conjunction	4948 Jul 23 09:21	3°♄55'47	0°-34'-3
minimum elong	4942 May 04 02:44	15°♄01'22	2°08'31	minimum elong	4948 Jul 23 09:22	3°♄55'48	0°34'04
max. Earth dist.	4942 May 04 02:40	15°♄01'20	10.63699 AU	max. Earth dist.	4948 Jul 23 10:59	3°♄56'19	10.16472 AU
morning rise	4942 May 21 04:38	17°♄06'28		morning rise	4948 Aug 10 10:29	6°♄13'47	
retrograde	4942 Sep 03 14:04	24°♄48'08		retrograde	4948 Nov 24 02:48	14°♄22'41	
opposition	4942 Nov 12 14:48	21°♄23'14	-2°-38'-37	opposition	4949 Jan 30 16:13	10°♄53'55	0°-23'-27
min. Earth dist.	4942 Nov 12 14:17	21°♄23'20	8.59239 AU	min. Earth dist.	4949 Jan 30 14:53	10°♄54'11	8.14673 AU
direct	4943 Jan 19 14:43	18°♄02'34		direct	4949 Apr 07 12:27	7°♄26'34	
evening set	4943 Apr 29 22:06	25°♄27'18			4949 Jul 16 08:38	15°♄	
				evening set	4949 Jul 20 00:21	15°♄27'27	
conjunction	4943 May 16 23:24	27°♄33'17	-2°-7'-21	conjunction	4949 Aug 07 01:27	17°♄45'49	0°-3'-36
minimum elong	4943 May 16 23:25	27°♄33'18	2°07'23	minimum elong	4949 Aug 07 01:26	17°♄45'49	0°03'37
max. Earth dist.	4943 May 16 23:23	27°♄33'17	10.54454 AU	behind sun begin	4949 Aug 06 18:10	17°♄43'30	
morning rise	4943 Jun 03 05:07	29°♄40'38		behind sun end	4949 Aug 07 08:43	17°♄48'08	
	4943 Jun 05 21:11	0°♄		max. Earth dist.	4949 Aug 07 02:34	17°♄46'08	10.13392 AU
retrograde	4943 Sep 17 00:51	7°♄29'16		morning rise	4949 Aug 25 04:00	20°♄04'38	
opposition	4943 Nov 25 18:03	4°♄03'15	-2°-33'-37	asc. node	4949 Sep 19 13:59	23°♄07'39	
min. Earth dist.	4943 Nov 25 17:37	4°♄03'20	8.49895 AU	retrograde	4949 Dec 08 07:12	28°♄13'02	
direct	4944 Feb 01 09:36	0°♄41'34		opposition	4950 Feb 13 13:20	24°♄44'33	0°14'56
evening set	4944 May 11 23:08	8°♄12'26		min. Earth dist.	4950 Feb 13 12:19	24°♄44'45	8.12658 AU
				direct	4950 Apr 21 13:55	21°♄16'23	
conjunction	4944 May 29 04:37	10°♄20'48	-1°-59'-57	evening set	4950 Aug 03 17:49	29°♄21'00	
minimum elong	4944 May 29 04:39	10°♄20'49	2°00'00		4950 Aug 08 21:00	0°♄	
max. Earth dist.	4944 May 29 05:21	10°♄21'02	10.45154 AU				
morning rise	4944 Jun 15 14:33	12°♄30'33		conjunction	4950 Aug 21 19:59	1°♄39'47	0°27'17
retrograde	4944 Sep 29 17:36	20°♄25'35		minimum elong	4950 Aug 21 19:57	1°♄39'47	0°27'17
opposition	4944 Dec 08 01:10	16°♄58'34	-2°-20'-50	max. Earth dist.	4950 Aug 21 21:02	1°♄40'07	10.12471 AU
min. Earth dist.	4944 Dec 08 00:22	16°♄58'43	8.40722 AU	morning rise	4950 Sep 08 22:26	3°♄58'40	
direct	4945 Feb 13 08:53	13°♄35'45		retrograde	4950 Dec 22 09:53	12°♄04'56	
evening set	4945 May 25 08:16	21°♄13'07		opposition	4951 Feb 27 10:42	8°♄36'59	0°52'34
				min. Earth dist.	4951 Feb 27 09:29	8°♄37'15	8.12867 AU
conjunction	4945 Jun 11 18:24	23°♄23'57	-1°-46'-20	direct	4951 May 05 17:45	5°♄08'16	
minimum elong	4945 Jun 11 18:27	23°♄23'58	1°46'22	evening set	4951 Aug 18 12:49	13°♄15'07	
max. Earth dist.	4945 Jun 11 20:14	23°♄24'32	10.36262 AU				
morning rise	4945 Jun 29 08:41	25°♄36'08		conjunction	4951 Sep 05 14:39	15°♄33'36	0°56'30
	4945 Aug 07 07:28	0°♄		minimum elong	4951 Sep 05 14:37	15°♄33'35	0°56'31
retrograde	4945 Oct 13 14:50	3°♄36'43		max. Earth dist.	4951 Sep 05 15:53	15°♄34'00	10.13772 AU
opposition	4945 Dec 21 12:14	0°♄08'51	-2°00'-27	morning rise	4951 Sep 23 15:29	17°♄51'47	
min. Earth dist.	4945 Dec 21 10:36	0°♄09'10	8.32180 AU	retrograde	4952 Jan 05 10:22	25°♄54'25	
	4945 Dec 23 08:30	30°♄09'10		opposition	4952 Mar 12 07:29	22°♄27'16	1°27'00
direct	4946 Feb 26 14:14	26°♄44'53		min. Earth dist.	4952 Mar 12 06:01	22°♄27'34	8.15282 AU
	4946 Apr 29 09:54	0°♄		direct	4952 May 18 21:41	18°♄58'17	
evening set	4946 Jun 08 01:25	4°♄28'45		evening set	4952 Sep 01 06:59	27°♄05'42	
conjunction	4946 Jun 25 16:13	6°♄42'01	-1°-26'-51	conjunction	4952 Sep 19 07:04	29°♄23'11	1°22'20
minimum elong	4946 Jun 25 16:16	6°♄42'02	1°26'53	minimum elong	4952 Sep 19 07:01	29°♄23'10	1°22'21
max. Earth dist.	4946 Jun 25 18:38	6°♄42'47	10.28237 AU	max. Earth dist.	4952 Sep 19 08:23	29°♄23'36	10.17216 AU
morning rise	4946 Jul 13 10:44	8°♄56'31					



	4952 Sep 24 01:58	0°♄		conjunction	4958 Dec 09 14:03	18°♄07'06	1°53'00
morning rise	4952 Oct 07 04:57	1°♄40'00		minimum elong	4958 Dec 09 14:05	18°♄07'07	1°53'00
retrograde	4953 Jan 18 08:08	9°♄37'41		max. Earth dist.	4958 Dec 09 13:25	18°♄06'54	10.65423 AU
opposition	4953 Mar 26 02:37	6°♄11'34	1°56'09	morning rise	4958 Dec 26 13:51	20°♄11'11	
min. Earth dist.	4953 Mar 26 01:12	6°♄11'51	8.19763 AU	retrograde	4959 Apr 05 15:55	27°♄29'22	
direct	4953 Jun 02 01:33	2°♄42'37		opposition	4959 Jun 12 22:16	24°♄09'56	2°10'17
evening set	4953 Sep 15 21:44	10°♄48'50		min. Earth dist.	4959 Jun 12 23:09	24°♄09'46	8.69830 AU
				direct	4959 Aug 22 08:27	20°♄45'46	
conjunction	4953 Oct 03 18:59	13°♄04'44	1°43'15	evening set	4959 Dec 05 01:28	28°♄17'56	
minimum elong	4953 Oct 03 18:56	13°♄04'43	1°43'16		4959 Dec 19 04:12	0°♄	
max. Earth dist.	4953 Oct 03 20:11	13°♄05'07	10.22614 AU				
morning rise	4953 Oct 21 13:07	15°♄19'42		conjunction	4959 Dec 22 02:44	0°♄21'26	1°37'27
retrograde	4954 Jan 31 23:50	23°♄11'24		minimum elong	4959 Dec 22 02:47	0°♄21'27	1°37'28
opposition	4954 Apr 08 19:20	19°♄46'27	2°18'23	max. Earth dist.	4959 Dec 22 01:10	0°♄20'58	10.73840 AU
min. Earth dist.	4954 Apr 08 18:32	19°♄46'37	8.26055 AU	morning rise	4960 Jan 08 00:16	2°♄23'52	
direct	4954 Jun 16 04:41	16°♄17'50		retrograde	4960 Apr 16 22:48	9°♄37'00	
evening set	4954 Sep 30 06:50	24°♄21'06		opposition	4960 Jun 24 15:41	6°♄18'16	1°48'21
				min. Earth dist.	4960 Jun 24 17:40	6°♄17'53	8.77700 AU
conjunction	4954 Oct 18 00:34	26°♄35'01	1°58'12	direct	4960 Sep 03 06:31	2°♄55'08	
minimum elong	4954 Oct 18 00:32	26°♄35'00	1°58'13	evening set	4960 Dec 16 09:24	10°♄20'46	
max. Earth dist.	4954 Oct 18 01:03	26°♄35'10	10.29651 AU				
morning rise	4954 Nov 04 14:39	28°♄47'50		conjunction	4961 Jan 02 08:20	12°♄22'46	1°17'49
	4954 Nov 14 10:59	0°♄		minimum elong	4961 Jan 02 08:23	12°♄22'47	1°17'50
retrograde	4955 Feb 14 09:21	6°♄32'50		max. Earth dist.	4961 Jan 02 05:28	12°♄21'54	10.81116 AU
opposition	4955 Apr 22 08:51	3°♄09'08	2°32'41	morning rise	4961 Jan 19 04:15	14°♄23'52	
min. Earth dist.	4955 Apr 22 08:55	3°♄09'08	8.33783 AU	retrograde	4961 Apr 29 02:33	21°♄33'17	
	4955 Jun 11 04:44	30°♄		opposition	4961 Jul 07 05:52	18°♄15'00	1°22'03
direct	4955 Jun 30 05:27	29°♄41'07		min. Earth dist.	4961 Jul 07 08:23	18°♄14'32	8.84263 AU
	4955 Jul 19 06:11	0°♄		direct	4961 Sep 16 01:16	14°♄52'53	
evening set	4955 Oct 14 08:49	7°♄39'53		evening set	4961 Dec 28 11:26	22°♄12'47	
conjunction	4955 Oct 31 22:43	9°♄51'35	2°06'35	conjunction	4962 Jan 14 08:32	24°♄13'34	0°55'04
minimum elong	4955 Oct 31 22:41	9°♄51'35	2°06'35	minimum elong	4962 Jan 14 08:33	24°♄13'35	0°55'05
max. Earth dist.	4955 Oct 31 22:08	9°♄51'24	10.37917 AU	max. Earth dist.	4962 Jan 14 05:14	24°♄12'35	10.86963 AU
morning rise	4955 Nov 18 08:42	12°♄02'05		morning rise	4962 Jan 31 03:11	26°♄13'38	
	4955 Dec 13 16:35	15°♄			4962 Mar 07 01:48	0°♄	
retrograde	4956 Feb 27 13:07	19°♄40'01		retrograde	4962 May 11 05:49	3°♄20'40	
opposition	4956 May 04 18:28	16°♄17'34	2°38'40	opposition	4962 Jul 19 17:20	0°♄02'35	0°52'38
min. Earth dist.	4956 May 04 18:53	16°♄17'29	8.42504 AU	min. Earth dist.	4962 Jul 19 19:23	0°♄02'12	8.89307 AU
	4956 May 21 12:18	15°♄			4962 Jul 20 07:08	30°♄	
direct	4956 Jul 13 02:02	12°♄50'20		direct	4962 Sep 28 14:06	26°♄41'22	
	4956 Sep 02 13:14	15°♄			4962 Dec 03 12:17	0°♄	
evening set	4956 Oct 27 02:15	20°♄43'20		evening set	4963 Jan 09 08:50	3°♄56'27	
conjunction	4956 Nov 13 12:27	22°♄52'47	2°08'16	conjunction	4963 Jan 26 04:28	5°♄56'19	0°30'13
minimum elong	4956 Nov 13 12:27	22°♄52'47	2°08'16	minimum elong	4963 Jan 26 04:29	5°♄56'19	0°30'14
max. Earth dist.	4956 Nov 13 11:25	22°♄52'28	10.46961 AU	max. Earth dist.	4963 Jan 26 01:55	5°♄55'33	10.91214 AU
morning rise	4956 Nov 30 18:37	25°♄00'59		morning rise	4963 Feb 11 22:06	7°♄55'38	
	4957 Jan 15 22:35	0°♄			4963 May 17 17:08	15°♄	
retrograde	4957 Mar 11 10:41	2°♄31'53		retrograde	4963 May 23 07:23	15°♄01'35	
	4957 May 07 08:59	30°♄			4963 May 28 22:40	15°♄	
opposition	4957 May 18 00:02	29°♄10'35	2°36'28	opposition	4963 Aug 01 03:16	11°♄43'27	0°21'19
min. Earth dist.	4957 May 18 00:14	29°♄10'32	8.51750 AU	min. Earth dist.	4963 Aug 01 04:59	11°♄43'08	8.92702 AU
direct	4957 Jul 26 18:21	25°♄44'19		direct	4963 Oct 10 22:16	8°♄23'00	
	4957 Oct 09 10:34	0°♄			4964 Jan 16 04:40	15°♄	
evening set	4957 Nov 09 10:32	3°♄30'36		evening set	4964 Jan 21 02:53	15°♄34'15	
conjunction	4957 Nov 26 17:25	5°♄37'54	2°03'33	conjunction	4964 Feb 06 21:10	17°♄33'27	0°04'21
minimum elong	4957 Nov 26 17:27	5°♄37'54	2°03'33	minimum elong	4964 Feb 06 21:11	17°♄33'27	0°04'22
max. Earth dist.	4957 Nov 26 16:35	5°♄37'38	10.56299 AU	behind sun begin	4964 Feb 06 14:18	17°♄31'25	
morning rise	4957 Dec 13 20:09	7°♄43'56		behind sun end	4964 Feb 07 04:04	17°♄35'29	
retrograde	4958 Mar 24 03:13	15°♄08'09		max. Earth dist.	4964 Feb 06 18:55	17°♄32'49	10.93755 AU
opposition	4958 May 31 01:16	11°♄47'51	2°26'42	morning rise	4964 Feb 23 14:11	19°♄32'19	
min. Earth dist.	4958 May 31 01:21	11°♄47'50	8.61024 AU	desc. node	4964 Apr 08 15:45	24°♄11'08	
direct	4958 Aug 09 04:55	8°♄22'37		retrograde	4964 Jun 03 09:50	26°♄38'33	
	4958 Nov 22 10:06	16°♄01'50		opposition	4964 Aug 12 12:14	23°♄20'06	0°-10'-39
evening set				min. Earth dist.	4964 Aug 12 14:11	23°♄19'44	8.94363 AU



direct	4964 Oct 22 04:14	20° $\approx$ 00'12		conjunction	4971 Apr 29 02:07	10° $\approx$ 00'24	-2°-7'-10
evening set	4965 Jan 31 19:04	27° $\approx$ 08'46		minimum elong	4971 Apr 29 02:06	10° $\approx$ 00'24	2°07'12
				max. Earth dist.	4971 Apr 29 03:00	10° $\approx$ 00'40	10.65311 AU
conjunction	4965 Feb 17 12:13	29° $\approx$ 07'35	0°-21'-43	morning rise	4971 May 16 02:40	12° $\approx$ 04'52	
minimum elong	4965 Feb 17 12:13	29° $\approx$ 07'35	0°21'44		4971 Jun 10 16:23	15° $\approx$	
max. Earth dist.	4965 Feb 17 09:24	29° $\approx$ 06'44	10.94529 AU	retrograde	4971 Aug 29 05:14	19° $\approx$ 44'20	
	4965 Feb 24 20:12	0° $\approx$		opposition	4971 Nov 07 10:32	16° $\approx$ 19'20	-2°-38'-32
morning rise	4965 Mar 06 05:06	1° $\approx$ 06'19		min. Earth dist.	4971 Nov 07 09:17	16° $\approx$ 19'34	8.61155 AU
retrograde	4965 Jun 15 11:41	8° $\approx$ 14'05			4971 Nov 25 00:46	15° $\approx$	
opposition	4965 Aug 24 20:42	4° $\approx$ 55'04	0°-42'-8	direct	4972 Jan 14 15:53	12° $\approx$ 58'30	
min. Earth dist.	4965 Aug 24 22:56	4° $\approx$ 54'39	8.94258 AU		4972 Mar 03 09:58	15° $\approx$	
direct	4965 Nov 03 07:07	1° $\approx$ 35'33		evening set	4972 Apr 23 19:53	20° $\approx$ 21'31	
evening set	4966 Feb 12 10:35	8° $\approx$ 42'40					
				conjunction	4972 May 10 19:52	22° $\approx$ 26'49	-2°-8'-37
conjunction	4966 Mar 01 03:02	10° $\approx$ 41'23	0°-46'-50	minimum elong	4972 May 10 19:52	22° $\approx$ 26'49	2°08'39
minimum elong	4966 Mar 01 03:00	10° $\approx$ 41'22	0°46'51	max. Earth dist.	4972 May 10 21:56	22° $\approx$ 27'27	10.56623 AU
max. Earth dist.	4966 Mar 01 00:33	10° $\approx$ 40'38	10.93521 AU	morning rise	4972 May 27 23:48	24° $\approx$ 33'22	
morning rise	4966 Mar 17 20:02	12° $\approx$ 40'16			4972 Jul 18 17:58	0° $\approx$	
retrograde	4966 Jun 27 15:30	19° $\approx$ 50'54		retrograde	4972 Sep 10 15:17	2° $\approx$ 19'50	
opposition	4966 Sep 06 05:36	16° $\approx$ 31'07	-1°-11'-58		4972 Nov 05 02:48	30° $\approx$	
min. Earth dist.	4966 Sep 06 07:05	16° $\approx$ 30'50	8.92389 AU	opposition	4972 Nov 19 12:20	28° $\approx$ 53'47	-2°-36'-47
direct	4966 Nov 15 10:46	13° $\approx$ 11'48		min. Earth dist.	4972 Nov 19 10:09	28° $\approx$ 54'13	8.52306 AU
evening set	4967 Feb 24 02:47	20° $\approx$ 18'42		direct	4973 Jan 26 08:03	25° $\approx$ 32'12	
					4973 Apr 10 16:03	0° $\approx$	
conjunction	4967 Mar 12 18:59	22° $\approx$ 17'39	-1°-10'-6	evening set	4973 May 06 18:05	3° $\approx$ 10'03	
minimum elong	4967 Mar 12 18:57	22° $\approx$ 17'38	1°10'07				
max. Earth dist.	4967 Mar 12 17:47	22° $\approx$ 17'17	10.90765 AU	conjunction	4973 May 23 21:48	5° $\approx$ 10'35	-2°-3'-53
morning rise	4967 Mar 29 12:16	24° $\approx$ 16'57		minimum elong	4973 May 23 21:50	5° $\approx$ 10'35	2°03'55
	4967 May 27 06:45	0° $\approx$		max. Earth dist.	4973 May 24 00:05	5° $\approx$ 09'17	10.47732 AU
retrograde	4967 Jul 10 00:40	1° $\approx$ 31'41		morning rise	4973 Jun 10 05:46	7° $\approx$ 17'27	
	4967 Aug 23 22:48	30° $\approx$		retrograde	4973 Sep 24 07:36	15° $\approx$ 10'29	
opposition	4967 Sep 18 15:46	28° $\approx$ 10'59	-1°-39'-2	opposition	4973 Dec 02 18:14	11° $\approx$ 43'35	-2°-27'-14
min. Earth dist.	4967 Sep 18 16:06	28° $\approx$ 10'55	8.88824 AU	min. Earth dist.	4973 Dec 02 15:51	11° $\approx$ 44'04	8.43461 AU
direct	4967 Nov 27 12:57	24° $\approx$ 51'43		direct	4974 Feb 08 03:49	8° $\approx$ 12'07	
	4968 Feb 18 08:40	0° $\approx$		evening set	4974 May 20 00:15	15° $\approx$ 15'16	
evening set	4968 Mar 06 21:13	1° $\approx$ 59'37					
				conjunction	4974 Jun 06 08:15	18° $\approx$ 10'10	-1°-52'-50
conjunction	4968 Mar 23 13:34	3° $\approx$ 59'07	-1°-30'-38	minimum elong	4974 Jun 06 08:17	18° $\approx$ 10'11	1°52'52
minimum elong	4968 Mar 23 13:31	3° $\approx$ 59'07	1°30'38	max. Earth dist.	4974 Jun 06 10:26	18° $\approx$ 10'52	10.39091 AU
max. Earth dist.	4968 Mar 23 13:11	3° $\approx$ 59'01	10.86371 AU	morning rise	4974 Jun 23 20:41	20° $\approx$ 17'27	
morning rise	4968 Apr 09 07:43	5° $\approx$ 59'13		retrograde	4974 Oct 08 03:22	28° $\approx$ 16'20	
retrograde	4968 Jul 21 12:24	13° $\approx$ 19'04		opposition	4974 Dec 16 04:23	24° $\approx$ 14'46	-2°-9'-56
opposition	4968 Sep 30 03:54	9° $\approx$ 57'20	-2°-2'-14	min. Earth dist.	4974 Dec 16 02:09	24° $\approx$ 14'12	8.35089 AU
min. Earth dist.	4968 Sep 30 03:45	9° $\approx$ 57'22	8.83700 AU	direct	4975 Feb 21 07:24	21° $\approx$ 12'51	
direct	4968 Dec 08 14:46	6° $\approx$ 37'57		evening set	4975 Jun 02 14:28	29° $\approx$ 10'54	
evening set	4969 Mar 18 19:00	13° $\approx$ 48'05			4975 Jun 09 16:30	0° $\approx$	
conjunction	4969 Apr 04 12:02	15° $\approx$ 48'29	-1°-47'-31	conjunction	4975 Jun 20 03:08	1° $\approx$ 19'14	-1°-35'-42
minimum elong	4969 Apr 04 12:00	15° $\approx$ 48'29	1°47'32	minimum elong	4975 Jun 20 03:11	1° $\approx$ 19'15	1°35'43
max. Earth dist.	4969 Apr 04 11:22	15° $\approx$ 48'17	10.80507 AU	max. Earth dist.	4975 Jun 20 05:34	1° $\approx$ 20'00	10.31160 AU
morning rise	4969 Apr 21 07:45	17° $\approx$ 49'43		morning rise	4975 Jul 07 20:03	3° $\approx$ 32'52	
retrograde	4969 Aug 03 04:43	25° $\approx$ 15'33		retrograde	4975 Oct 22 03:10	11° $\approx$ 36'30	
opposition	4969 Oct 12 18:44	21° $\approx$ 52'45	-2°-20'-30	opposition	4975 Dec 29 18:15	8° $\approx$ 08'27	-1°-45'-21
min. Earth dist.	4969 Oct 12 18:45	21° $\approx$ 52'45	8.77200 AU	min. Earth dist.	4975 Dec 29 16:06	8° $\approx$ 08'53	8.27644 AU
direct	4969 Dec 20 19:57	18° $\approx$ 33'02		direct	4976 Mar 05 16:52	4° $\approx$ 44'01	
evening set	4970 Mar 30 21:22	25° $\approx$ 46'31		evening set	4976 Jun 15 12:55	12° $\approx$ 31'53	
conjunction	4970 Apr 16 15:48	27° $\approx$ 48'12	-1°-59'-56	conjunction	4976 Jul 03 06:13	14° $\approx$ 46'29	-1°-13'-8
minimum elong	4970 Apr 16 15:47	27° $\approx$ 48'12	1°59'58	minimum elong	4976 Jul 03 06:15	14° $\approx$ 46'30	1°13'09
max. Earth dist.	4970 Apr 16 15:25	27° $\approx$ 48'05	10.73389 AU	max. Earth dist.	4976 Jul 03 09:18	14° $\approx$ 47'29	10.24365 AU
morning rise	4970 May 03 13:40	29° $\approx$ 50'54		morning rise	4976 Jul 21 03:07	17° $\approx$ 02'14	
	4970 May 04 20:17	0° $\approx$		retrograde	4976 Nov 04 06:36	25° $\approx$ 09'10	
retrograde	4970 Aug 16 02:16	7° $\approx$ 23'21		opposition	4977 Jan 11 11:05	21° $\approx$ 40'51	-1°-14'-32
opposition	4970 Oct 25 12:45	3° $\approx$ 59'27	-2°-32'-54	min. Earth dist.	4977 Jan 11 08:35	21° $\approx$ 41'22	8.21536 AU
min. Earth dist.	4970 Oct 25 12:30	3° $\approx$ 59'30	8.69577 AU	direct	4977 Mar 19 07:01	18° $\approx$ 15'25	
direct	4971 Jan 02 03:37	0° $\approx$ 39'15		evening set	4977 Jun 29 18:44	26° $\approx$ 09'08	
evening set	4971 Apr 12 05:18	7° $\approx$ 57'06					



conjunction	4977 Jul 17 16:03	28° <del>25</del> 38	0°-46'-12	min. Earth dist.	4983 Apr 03 12:07	14° <del>24</del> 09	8.23864 AU
minimum elong	4977 Jul 17 16:05	28° <del>25</del> 39	0°46'13	direct	4983 Jun 10 17:54	10° <del>25</del> 541	
max. Earth dist.	4977 Jul 17 19:39	28° <del>26</del> 48	10.19077 AU	evening set	4983 Sep 24 17:11	19° <del>26</del> 00'21	
	4977 Jul 29 23:35	0° <del>27</del>					
morning rise	4977 Aug 04 16:03	0° <del>28</del> 43'01		conjunction	4983 Oct 12 12:24	21° <del>29</del> 15'05	1°52'43
retrograde	4977 Nov 18 12:38	8° <del>30</del> 51'38		minimum elong	4983 Oct 12 12:21	21° <del>29</del> 15'04	1°52'44
opposition	4978 Jan 25 06:28	5° <del>31</del> 23'18	0°-39'-6	max. Earth dist.	4983 Oct 12 11:39	21° <del>29</del> 14'51	10.26997 AU
min. Earth dist.	4978 Jan 25 03:37	5° <del>32</del> 23'53	8.17095 AU	morning rise	4983 Oct 30 04:19	23° <del>30</del> 28'49	
direct	4978 Apr 02 02:01	1° <del>33</del> 56'56			4984 Jan 02 11:47	0° <del>31</del>	
evening set	4978 Jul 14 06:31	9° <del>34</del> 55'40		retrograde	4984 Feb 09 04:43	1° <del>35</del> 16'42	
					4984 Mar 18 13:18	30° <del>36</del>	
conjunction	4978 Aug 01 06:48	12° <del>37</del> 13'31	0°-16'-25	opposition	4984 Apr 16 03:01	27° <del>37</del> 52'40	2°27'42
minimum elong	4978 Aug 01 06:48	12° <del>37</del> 13'31	0°16'26	min. Earth dist.	4984 Apr 16 02:48	27° <del>37</del> 52'42	8.30698 AU
max. Earth dist.	4978 Aug 01 10:22	12° <del>38</del> 14'39	10.15567 AU	direct	4984 Jun 23 19:55	24° <del>38</del> 24'31	
morning rise	4978 Aug 19 08:43	14° <del>39</del> 31'56			4984 Sep 17 14:12	0° <del>39</del>	
	4978 Aug 23 02:29	15° <del>40</del>		evening set	4984 Oct 07 22:17	2° <del>40</del> 25'17	
retrograde	4978 Dec 02 18:19	22° <del>41</del> 40'34					
opposition	4979 Feb 08 03:23	19° <del>42</del> 12'26	0°-1'-6	conjunction	4984 Oct 25 13:54	4° <del>43</del> 37'56	2°03'53
min. Earth dist.	4979 Feb 08 00:44	19° <del>42</del> 12'58	8.14523 AU	minimum elong	4984 Oct 25 13:52	4° <del>43</del> 37'56	2°03'54
asc. node	4979 Feb 19 00:40	18° <del>43</del> 19'36		max. Earth dist.	4984 Oct 25 13:32	4° <del>43</del> 37'49	10.34461 AU
direct	4979 Apr 16 01:23	15° <del>44</del> 45'12		morning rise	4984 Nov 12 01:32	6° <del>44</del> 49'23	
evening set	4979 Jul 28 22:54	23° <del>45</del> 47'59		retrograde	4985 Feb 21 12:00	14° <del>45</del> 30'22	
				opposition	4985 Apr 29 14:18	11° <del>46</del> 07'22	2°37'11
conjunction	4979 Aug 16 00:49	26° <del>46</del> 06'32	0°14'32	min. Earth dist.	4985 Apr 29 14:22	11° <del>46</del> 07'21	8.38720 AU
minimum elong	4979 Aug 16 00:48	26° <del>46</del> 06'32	0°14'32	direct	4985 Jul 07 17:13	7° <del>47</del> 39'45	
behind sun begin	4979 Aug 15 21:51	26° <del>47</del> 05'36			4985 Oct 16 23:26	15° <del>48</del>	
behind sun end	4979 Aug 16 03:45	26° <del>47</del> 07'28		evening set	4985 Oct 21 19:13	15° <del>48</del> 35'13	
max. Earth dist.	4979 Aug 16 03:21	26° <del>48</del> 07'21	10.13956 AU				
morning rise	4979 Sep 03 03:16	28° <del>49</del> 25'18		conjunction	4985 Nov 08 07:08	17° <del>49</del> 45'39	2°08'22
	4979 Sep 15 22:22	0° <del>50</del>		minimum elong	4985 Nov 08 07:08	17° <del>49</del> 45'39	2°08'23
retrograde	4979 Dec 16 22:56	6° <del>51</del> 32'21		max. Earth dist.	4985 Nov 08 06:37	17° <del>49</del> 45'29	10.42909 AU
opposition	4980 Feb 22 00:47	3° <del>52</del> 04'41	0°37'06	morning rise	4985 Nov 25 14:45	19° <del>50</del> 54'48	
min. Earth dist.	4980 Feb 21 23:11	3° <del>52</del> 05'01	8.13885 AU	retrograde	4986 Mar 06 12:41	27° <del>51</del> 28'38	
	4980 Apr 08 13:37	30° <del>53</del>		opposition	4986 May 12 21:21	24° <del>52</del> 06'41	2°38'22
direct	4980 Apr 29 03:18	29° <del>54</del> 36'47		min. Earth dist.	4986 May 12 22:10	24° <del>52</del> 06'31	8.47489 AU
	4980 May 19 17:01	0° <del>55</del>		direct	4986 Jul 21 10:28	20° <del>53</del> 39'45	
evening set	4980 Aug 11 17:47	7° <del>56</del> 42'29		evening set	4986 Nov 04 07:15	28° <del>54</del> 28'54	
					4986 Nov 16 15:50	0° <del>55</del>	
conjunction	4980 Aug 29 19:48	10° <del>56</del> 01'03	0°44'37				
minimum elong	4980 Aug 29 19:46	10° <del>56</del> 01'02	0°44'37	conjunction	4986 Nov 21 15:36	0° <del>56</del> 37'07	2°06'17
max. Earth dist.	4980 Aug 29 20:45	10° <del>56</del> 01'21	10.14286 AU	minimum elong	4986 Nov 21 15:37	0° <del>56</del> 37'08	2°06'17
morning rise	4980 Sep 16 21:20	12° <del>57</del> 19'27		max. Earth dist.	4986 Nov 21 14:19	0° <del>56</del> 36'43	10.51881 AU
retrograde	4980 Dec 30 01:29	20° <del>58</del> 23'32		morning rise	4986 Dec 08 19:42	2° <del>57</del> 44'06	
opposition	4981 Mar 06 22:07	16° <del>59</del> 56'37	1°13'07	retrograde	4987 Mar 19 05:44	10° <del>58</del> 11'00	
min. Earth dist.	4981 Mar 06 21:36	16° <del>59</del> 56'43	8.15238 AU	opposition	4987 May 26 00:10	6° <del>59</del> 50'00	2°31'42
direct	4981 May 13 07:04	13° <del>60</del> 28'16		min. Earth dist.	4987 May 26 01:42	6° <del>59</del> 49'42	8.56536 AU
evening set	4981 Aug 26 12:39	21° <del>61</del> 35'24		direct	4987 Aug 04 00:08	3° <del>60</del> 23'54	
				evening set	4987 Nov 17 10:13	11° <del>61</del> 06'08	
conjunction	4981 Sep 13 13:22	23° <del>62</del> 53'16	1°12'03				
minimum elong	4981 Sep 13 13:19	23° <del>62</del> 53'15	1°12'04	conjunction	4987 Dec 04 15:18	13° <del>62</del> 37'12	1°58'06
max. Earth dist.	4981 Sep 13 13:15	23° <del>62</del> 53'13	10.16625 AU	minimum elong	4987 Dec 04 15:20	13° <del>62</del> 37'17	1°58'06
morning rise	4981 Oct 01 12:37	26° <del>63</del> 10'38		max. Earth dist.	4987 Dec 04 13:10	13° <del>62</del> 31'37	10.60912 AU
	4981 Nov 03 02:58	0° <del>64</del>		morning rise	4987 Dec 21 16:25	15° <del>63</del> 37'12	
retrograde	4982 Jan 13 00:19	4° <del>65</del> 10'26		retrograde	4988 Mar 30 18:37	22° <del>64</del> 37'47	
opposition	4982 Mar 20 18:16	0° <del>66</del> 44'22	1°44'42	opposition	4988 Jun 06 22:37	19° <del>65</del> 37'36	2°17'58
min. Earth dist.	4982 Mar 20 18:14	0° <del>66</del> 44'23	8.18610 AU	min. Earth dist.	4988 Jun 07 00:03	19° <del>65</del> 37'20	8.65414 AU
	4982 Mar 29 21:41	30° <del>67</del>		direct	4988 Aug 16 07:17	15° <del>66</del> 52'30	
direct	4982 May 27 12:35	27° <del>68</del> 15'50		evening set	4988 Nov 29 04:29	23° <del>67</del> 27'36	
	4982 Jul 23 14:10	0° <del>69</del>					
evening set	4982 Sep 10 05:15	5° <del>70</del> 22'39		conjunction	4988 Dec 16 06:49	25° <del>68</del> 31'52	1°44'34
				minimum elong	4988 Dec 16 06:52	25° <del>68</del> 31'53	1°44'34
conjunction	4982 Sep 28 03:37	7° <del>71</del> 39'11	1°35'11	max. Earth dist.	4988 Dec 16 04:49	25° <del>68</del> 31'16	10.69581 AU
minimum elong	4982 Sep 28 03:34	7° <del>71</del> 39'10	1°35'11	morning rise	4989 Jan 02 05:27	27° <del>69</del> 35'01	
max. Earth dist.	4982 Sep 28 02:56	7° <del>72</del> 38'58	10.20935 AU		4989 Jan 23 07:36	0° <del>70</del>	
morning rise	4982 Oct 15 23:33	9° <del>73</del> 54'57		retrograde	4989 Apr 12 03:21	4° <del>71</del> 50'06	
retrograde	4983 Jan 26 16:45	17° <del>74</del> 49'14		opposition	4989 Jun 19 17:02	1° <del>72</del> 30'37	1°58'13
opposition	4983 Apr 03 12:05	14° <del>75</del> 24'09	2°09'59	min. Earth dist.	4989 Jun 19 17:54	1° <del>72</del> 30'27	8.73724 AU



	4989 Jul 10 05:29	30° <del>R</del> <sup>7</sup>		max. Earth dist.	4995 Feb 24 11:07	5° <del>Y</del> <sup>56</sup> 09	10.96090 AU
direct	4989 Aug 29 07:45	28° <del>X</del> <sup>06</sup> 33		morning rise	4995 Mar 13 04:10	7° <del>Y</del> <sup>54</sup> 46	
	4989 Oct 17 03:02	0° <del>Z</del>		retrograde	4995 Jun 22 17:45	15° <del>Y</del> <sup>02</sup> 53	
evening set	4989 Dec 11 14:52	5° <del>Z</del> <sup>34</sup> 47		opposition	4995 Sep 01 05:30	11° <del>Y</del> <sup>43</sup> 48	0°-59'-11
				min. Earth dist.	4995 Sep 01 05:41	11° <del>Y</del> <sup>43</sup> 46	8.95593 AU
conjunction	4989 Dec 28 14:57	7° <del>Z</del> <sup>37</sup> 25	1°26'33	direct	4995 Nov 10 13:23	8° <del>Y</del> <sup>24</sup> 50	
minimum elong	4989 Dec 28 14:59	7° <del>Z</del> <sup>37</sup> 26	1°26'33	evening set	4996 Feb 19 09:51	15° <del>Y</del> <sup>30</sup> 34	
max. Earth dist.	4989 Dec 28 13:40	7° <del>Z</del> <sup>37</sup> 02	10.77497 AU				
morning rise	4990 Jan 14 11:33	9° <del>Z</del> <sup>39</sup> 04		conjunction	4996 Mar 07 01:55	17° <del>Y</del> <sup>29</sup> 04	-1°00'-10
retrograde	4990 Apr 24 08:45	16° <del>Z</del> <sup>49</sup> 43		minimum elong	4996 Mar 07 01:53	17° <del>Y</del> <sup>29</sup> 03	1°00'11
opposition	4990 Jul 02 07:55	13° <del>Z</del> <sup>30</sup> 47	1°33'38	max. Earth dist.	4996 Mar 07 01:05	17° <del>Y</del> <sup>28</sup> 49	10.94606 AU
min. Earth dist.	4990 Jul 02 08:39	13° <del>Z</del> <sup>30</sup> 38	8.81099 AU	morning rise	4996 Mar 23 18:54	19° <del>Y</del> <sup>27</sup> 50	
direct	4990 Sep 11 03:08	10° <del>Z</del> <sup>07</sup> 47		retrograde	4996 Jul 03 23:39	26° <del>Y</del> <sup>39</sup> 24	
evening set	4990 Dec 23 18:47	17° <del>Z</del> <sup>29</sup> 44		opposition	4996 Sep 12 14:22	23° <del>Y</del> <sup>19</sup> 40	-1°-27'-27
				min. Earth dist.	4996 Sep 12 14:50	23° <del>Y</del> <sup>19</sup> 35	8.93246 AU
conjunction	4991 Jan 09 16:49	19° <del>Z</del> <sup>30</sup> 59	1°05'01	direct	4996 Nov 21 14:12	20° <del>Y</del> <sup>00</sup> 58	
minimum elong	4991 Jan 09 16:51	19° <del>Z</del> <sup>31</sup> 00	1°05'02	evening set	4997 Mar 02 02:31	27° <del>Y</del> <sup>07</sup> 06	
max. Earth dist.	4991 Jan 09 15:40	19° <del>Z</del> <sup>30</sup> 38	10.84313 AU				
morning rise	4991 Jan 26 11:52	21° <del>Z</del> <sup>31</sup> 24		conjunction	4997 Mar 18 18:28	29° <del>Y</del> <sup>05</sup> 57	-1°-21'-55
retrograde	4991 May 06 11:46	28° <del>Z</del> <sup>38</sup> 50		minimum elong	4997 Mar 18 18:26	29° <del>Y</del> <sup>05</sup> 57	1°21'55
opposition	4991 Jul 14 19:54	25° <del>Z</del> <sup>20</sup> 18	1°05'26	max. Earth dist.	4997 Mar 18 17:36	29° <del>Y</del> <sup>05</sup> 42	10.91363 AU
min. Earth dist.	4991 Jul 14 21:14	25° <del>Z</del> <sup>20</sup> 03	8.87238 AU		4997 Mar 26 07:16	0° <del>Y</del>	
direct	4991 Sep 23 16:17	21° <del>Z</del> <sup>58</sup> 21		morning rise	4997 Apr 04 12:11	1° <del>Y</del> <sup>05</sup> 20	
evening set	4992 Jan 04 17:25	29° <del>Z</del> <sup>14</sup> 50		retrograde	4997 Jul 16 07:27	8° <del>Y</del> <sup>21</sup> 25	
	4992 Jan 11 02:30	0° <del>Y</del>		opposition	4997 Sep 25 00:36	5° <del>Y</del> <sup>00</sup> 52	-1°-52'-21
				min. Earth dist.	4997 Sep 25 00:55	5° <del>Y</del> <sup>00</sup> 48	8.89184 AU
conjunction	4992 Jan 21 13:35	1° <del>Y</del> <sup>14</sup> 58	0°40'59	direct	4997 Dec 03 16:26	1° <del>Y</del> <sup>42</sup> 13	
minimum elong	4992 Jan 21 13:36	1° <del>Y</del> <sup>14</sup> 58	0°41'00	evening set	4998 Mar 13 21:55	8° <del>Y</del> <sup>49</sup> 58	
max. Earth dist.	4992 Jan 21 11:38	1° <del>Y</del> <sup>14</sup> 23	10.89762 AU				
morning rise	4992 Feb 07 07:38	3° <del>Y</del> <sup>14</sup> 29		conjunction	4998 Mar 30 14:26	10° <del>Y</del> <sup>49</sup> 32	-1°-40'-26
retrograde	4992 May 17 11:36	10° <del>Y</del> <sup>20</sup> 02		minimum elong	4998 Mar 30 14:24	10° <del>Y</del> <sup>49</sup> 32	1°40'26
opposition	4992 Jul 26 05:46	7° <del>Y</del> <sup>01</sup> 41	0°34'50	max. Earth dist.	4998 Mar 30 14:34	10° <del>Y</del> <sup>49</sup> 35	10.86451 AU
min. Earth dist.	4992 Jul 26 07:17	7° <del>Y</del> <sup>01</sup> 24	8.91908 AU	morning rise	4998 Apr 16 09:12	12° <del>Y</del> <sup>49</sup> 49	
direct	4992 Oct 05 01:42	3° <del>Y</del> <sup>40</sup> 41		retrograde	4998 Jul 28 21:41	20° <del>Y</del> <sup>11</sup> 27	
evening set	4993 Jan 15 11:52	10° <del>Y</del> <sup>52</sup> 43		opposition	4998 Oct 07 13:14	16° <del>Y</del> <sup>49</sup> 54	-2°-12'-48
				min. Earth dist.	4998 Oct 07 12:42	16° <del>Y</del> <sup>50</sup> 00	8.83510 AU
conjunction	4993 Feb 01 06:35	12° <del>Y</del> <sup>52</sup> 00	0°15'29	direct	4998 Dec 15 20:28	13° <del>Y</del> <sup>31</sup> 06	
minimum elong	4993 Feb 01 06:35	12° <del>Y</del> <sup>52</sup> 00	0°15'30	evening set	4999 Mar 25 21:13	20° <del>Y</del> <sup>41</sup> 34	
behind sun begin	4993 Feb 01 04:26	12° <del>Y</del> <sup>51</sup> 22					
behind sun end	4993 Feb 01 08:44	12° <del>Y</del> <sup>52</sup> 38		conjunction	4999 Apr 11 14:51	22° <del>Y</del> <sup>42</sup> 14	-1°-54'-52
max. Earth dist.	4993 Feb 01 04:41	12° <del>Y</del> <sup>51</sup> 26	10.93632 AU	minimum elong	4999 Apr 11 14:50	22° <del>Y</del> <sup>42</sup> 14	1°54'53
morning rise	4993 Feb 17 23:57	14° <del>Y</del> <sup>50</sup> 53		max. Earth dist.	4999 Apr 11 15:23	22° <del>Y</del> <sup>42</sup> 24	10.79998 AU
	4993 Feb 19 07:17	15° <del>Y</del>		morning rise	4999 Apr 28 11:19	24° <del>Y</del> <sup>43</sup> 48	
retrograde	4993 May 29 12:36	21° <del>Y</del> <sup>55</sup> 57			4999 Jun 18 21:25	0° <del>Y</del>	
opposition	4993 Aug 07 14:05	18° <del>Y</del> <sup>37</sup> 33	0°03'05	retrograde	4999 Aug 10 17:30	2° <del>Y</del> <sup>11</sup> 45	
min. Earth dist.	4993 Aug 07 14:59	18° <del>Y</del> <sup>37</sup> 23	8.94921 AU		4999 Oct 04 07:02	30° <del>R</del> <sup>Y</sup>	
desc. node	4993 Sep 13 02:01	16° <del>Y</del> <sup>12</sup> 16		opposition	4999 Oct 20 04:57	28° <del>Y</del> <sup>49</sup> 07	-2°-27'-51
direct	4993 Oct 17 09:17	15° <del>Y</del> <sup>17</sup> 23		min. Earth dist.	4999 Oct 20 04:13	28° <del>Y</del> <sup>49</sup> 15	8.76375 AU
evening set	4994 Jan 27 03:52	22° <del>Y</del> <sup>26</sup> 06		direct	4999 Dec 28 00:24	25° <del>Y</del> <sup>29</sup> 56	
					5000 Mar 13 22:47	0° <del>Y</del>	
conjunction	4994 Feb 12 21:29	24° <del>Y</del> <sup>24</sup> 50	0°-10'-34	evening set	5000 Apr 07 01:48	2° <del>Y</del> <sup>44</sup> 18	
minimum elong	4994 Feb 12 21:29	24° <del>Y</del> <sup>24</sup> 50	0°10'35				
behind sun begin	4994 Feb 12 16:01	24° <del>Y</del> <sup>23</sup> 14		conjunction	5000 Apr 23 21:15	4° <del>Y</del> <sup>46</sup> 25	-2°-4'-27
behind sun end	4994 Feb 13 02:58	24° <del>Y</del> <sup>26</sup> 27		minimum elong	5000 Apr 23 21:14	4° <del>Y</del> <sup>46</sup> 25	2°04'29
max. Earth dist.	4994 Feb 12 20:32	24° <del>Y</del> <sup>24</sup> 33	10.95767 AU	max. Earth dist.	5000 Apr 23 21:08	4° <del>Y</del> <sup>46</sup> 23	10.72205 AU
morning rise	4994 Mar 01 14:20	26° <del>Y</del> <sup>23</sup> 22		morning rise	5000 May 10 20:15	6° <del>Y</del> <sup>49</sup> 39	
	4994 Apr 04 04:02	0° <del>Y</del>		retrograde	5000 Aug 23 16:49	14° <del>Y</del> <sup>24</sup> 29	
retrograde	4994 Jun 10 14:24	3° <del>Y</del> <sup>29</sup> 18		opposition	5000 Nov 02 00:06	11° <del>Y</del> <sup>00</sup> 44	-2°-36'-35
opposition	4994 Aug 19 21:35	0° <del>Y</del> <sup>10</sup> 39	0°-28'-37	min. Earth dist.	5000 Nov 01 23:50	11° <del>Y</del> <sup>00</sup> 47	8.68039 AU
min. Earth dist.	4994 Aug 19 21:43	0° <del>Y</del> <sup>10</sup> 38	8.96160 AU	direct	5001 Jan 09 09:27	7° <del>Y</del> <sup>40</sup> 54	
	4994 Aug 22 07:02	30° <del>R</del> <sup>Y</sup>		evening set	5001 Apr 19 12:34	15° <del>Y</del> <sup>00</sup> 15	
direct	4994 Oct 29 11:57	26° <del>Y</del> <sup>51</sup> 11			5001 Apr 19 11:45	15° <del>Y</del>	
	4995 Jan 01 09:54	0° <del>Y</del>					
evening set	4995 Feb 07 18:47	3° <del>Y</del> <sup>57</sup> 48		conjunction	5001 May 06 10:41	17° <del>Y</del> <sup>04</sup> 13	-2°-8'-33
				minimum elong	5001 May 06 10:41	17° <del>Y</del> <sup>04</sup> 13	2°08'36
conjunction	4995 Feb 24 11:31	5° <del>Y</del> <sup>56</sup> 16	0°-36'-4	max. Earth dist.	5001 May 06 10:02	17° <del>Y</del> <sup>04</sup> 01	10.63417 AU
minimum elong	4995 Feb 24 11:30	5° <del>Y</del> <sup>56</sup> 16	0°36'06	morning rise	5001 May 23 12:57	19° <del>Y</del> <sup>09</sup> 27	



retrograde	5001 Sep 05 22:35	26°♄51'26			5007 Oct 16 14:53	15°♄	
opposition	5001 Nov 14 23:19	23°♄26'33	-2°-38'-15	retrograde	5007 Nov 27 12:30	16°♄32'08	
min. Earth dist.	5001 Nov 14 23:26	23°♄26'31	8.58915 AU		5008 Jan 08 20:28	15°♄	
direct	5002 Jan 21 23:15	20°♄05'53		opposition	5008 Feb 03 02:18	13°♄03'25	0°-18'-57
evening set	5002 May 02 06:17	27°♄30'54		min. Earth dist.	5008 Feb 03 01:16	13°♄03'37	8.14371 AU
				direct	5008 Apr 10 00:01	9°♄36'01	
conjunction	5002 May 19 07:57	29°♄37'03	-2°-6'-40		5008 Jun 30 20:26	15°♄	
minimum elong	5002 May 19 07:58	29°♄37'03	2°06'43	evening set	5008 Jul 22 12:07	17°♄37'20	
max. Earth dist.	5002 May 19 08:05	29°♄37'05	10.54088 AU	asc. node	5008 Aug 08 09:06	19°♄46'40	
	5002 May 22 09:57	0°♄					
morning rise	5002 Jun 05 13:56	1°♄44'32		conjunction	5008 Aug 09 13:24	19°♄55'46	0°00'06
retrograde	5002 Sep 19 10:24	9°♄33'31		minimum elong	5008 Aug 09 13:24	19°♄55'46	0°00'07
opposition	5002 Nov 28 02:39	6°♄07'31	-2°-32'-20	behind sun begin	5008 Aug 09 06:18	19°♄53'31	
min. Earth dist.	5002 Nov 28 02:13	6°♄07'36	8.49489 AU	behind sun end	5008 Aug 09 20:31	19°♄58'02	
direct	5003 Feb 03 17:23	2°♄45'51		max. Earth dist.	5008 Aug 09 14:39	19°♄56'07	10.13153 AU
evening set	5003 May 15 07:48	10°♄17'06		morning rise	5008 Aug 27 16:00	22°♄14'37	
					5008 Nov 20 06:13	0°♄	
conjunction	5003 Jun 01 13:43	12°♄25'38	-1°-58'-32	retrograde	5008 Dec 10 16:57	0°♄23'00	
minimum elong	5003 Jun 01 13:45	12°♄25'39	1°58'35		5008 Dec 31 06:18	30°♄	
max. Earth dist.	5003 Jun 01 14:56	12°♄26'01	10.44715 AU	opposition	5009 Feb 15 23:29	26°♄54'32	0°19'27
morning rise	5003 Jun 18 23:53	14°♄35'32		min. Earth dist.	5009 Feb 15 22:12	26°♄54'48	8.12485 AU
retrograde	5003 Oct 03 02:59	22°♄30'58		direct	5009 Apr 24 00:56	23°♄26'20	
opposition	5003 Dec 11 10:02	19°♄03'56	-2°-18'-39		5009 Jul 24 22:40	0°♄	
min. Earth dist.	5003 Dec 11 08:49	19°♄04'11	8.40255 AU	evening set	5009 Aug 06 05:57	1°♄31'16	
direct	5004 Feb 16 17:45	15°♄41'09					
evening set	5004 May 27 17:32	23°♄18'56		conjunction	5009 Aug 24 08:11	3°♄50'05	0°30'50
				minimum elong	5009 Aug 24 08:10	3°♄50'04	0°30'50
conjunction	5004 Jun 14 04:05	25°♄29'59	-1°-44'-13	max. Earth dist.	5009 Aug 24 09:51	3°♄50'37	10.12365 AU
minimum elong	5004 Jun 14 04:08	25°♄30'00	1°44'15	morning rise	5009 Sep 11 10:27	6°♄08'55	
max. Earth dist.	5004 Jun 14 05:55	25°♄30'33	10.35781 AU	retrograde	5009 Dec 24 20:52	14°♄15'04	
morning rise	5004 Jul 01 18:42	27°♄42'20		opposition	5010 Mar 01 21:02	10°♄47'08	0°56'48
	5004 Jul 21 00:02	0°♄		min. Earth dist.	5010 Mar 01 19:18	10°♄47'29	8.12834 AU
retrograde	5004 Oct 16 01:14	5°♄43'15		direct	5010 May 08 03:48	7°♄18'22	
opposition	5004 Dec 23 21:25	2°♄15'25	-1°-57'-26	evening set	5010 Aug 21 00:58	15°♄25'23	
min. Earth dist.	5004 Dec 23 19:41	2°♄15'45	8.31689 AU				
	5005 Jan 23 18:15	30°♄		conjunction	5010 Sep 08 02:43	17°♄43'49	0°59'43
direct	5005 Feb 28 22:43	28°♄51'25		minimum elong	5010 Sep 08 02:40	17°♄43'49	0°59'43
	5005 Apr 05 13:53	0°♄		max. Earth dist.	5010 Sep 08 04:31	17°♄44'24	10.13808 AU
evening set	5005 Jun 10 11:30	6°♄35'47		morning rise	5010 Sep 26 03:12	20°♄01'55	
				retrograde	5011 Jan 07 22:09	28°♄04'19	
conjunction	5005 Jun 28 02:37	8°♄49'15	-1°-24'-7	opposition	5011 Mar 15 17:51	24°♄37'10	1°30'42
minimum elong	5005 Jun 28 02:39	8°♄49'16	1°24'08	min. Earth dist.	5011 Mar 15 16:18	24°♄37'29	8.15394 AU
max. Earth dist.	5005 Jun 28 04:13	8°♄49'46	10.27753 AU	direct	5011 May 22 08:01	21°♄08'08	
morning rise	5005 Jul 15 21:31	11°♄03'56		evening set	5011 Sep 04 19:05	29°♄15'35	
retrograde	5005 Oct 30 03:33	19°♄09'05			5011 Sep 10 15:49	0°♄	
opposition	5006 Jan 06 12:20	15°♄40'40	-1°-29'-26				
min. Earth dist.	5006 Jan 06 10:48	15°♄40'59	8.24252 AU	conjunction	5011 Sep 22 18:54	1°♄32'58	1°25'02
direct	5006 Mar 14 08:55	12°♄15'28		minimum elong	5011 Sep 22 18:51	1°♄32'57	1°25'02
evening set	5006 Jun 24 13:15	20°♄06'10		max. Earth dist.	5011 Sep 22 20:13	1°♄33'23	10.17395 AU
				morning rise	5011 Oct 10 16:26	3°♄49'40	
conjunction	5006 Jul 12 08:36	22°♄21'47	0°-59'-7	retrograde	5012 Jan 21 18:22	11°♄46'59	
minimum elong	5006 Jul 12 08:38	22°♄21'48	0°59'09	opposition	5012 Mar 28 12:53	8°♄20'53	1°59'06
max. Earth dist.	5006 Jul 12 09:50	22°♄22'11	10.21075 AU	min. Earth dist.	5012 Mar 28 11:58	8°♄21'04	8.20014 AU
morning rise	5006 Jul 30 07:16	24°♄38'27		direct	5012 Jun 04 12:52	4°♄51'52	
	5006 Sep 16 17:02	0°♄		evening set	5012 Sep 18 09:35	12°♄58'00	
retrograde	5006 Nov 13 08:14	2°♄46'20					
	5007 Jan 11 12:34	30°♄		conjunction	5012 Oct 06 06:25	15°♄13'45	1°45'17
opposition	5007 Jan 20 06:15	29°♄17'37	0°-56'00	minimum elong	5012 Oct 06 06:22	15°♄13'44	1°45'17
min. Earth dist.	5007 Jan 20 05:06	29°♄17'51	8.18370 AU	max. Earth dist.	5012 Oct 06 06:59	15°♄13'55	10.22922 AU
direct	5007 Mar 28 01:27	25°♄51'15		morning rise	5012 Oct 24 00:15	17°♄28'34	
	5007 Jun 06 13:05	0°♄		retrograde	5013 Feb 03 09:14	25°♄19'49	
evening set	5007 Jul 08 21:51	3°♄47'43		opposition	5013 Apr 11 05:30	21°♄54'55	2°20'25
				min. Earth dist.	5013 Apr 11 05:16	21°♄54'58	8.26426 AU
conjunction	5007 Jul 26 20:46	6°♄05'03	0°-30'-30	direct	5013 Jun 18 15:58	18°♄26'15	
minimum elong	5007 Jul 26 20:47	6°♄05'04	0°30'31	evening set	5013 Oct 02 18:05	26°♄29'17	
max. Earth dist.	5007 Jul 26 21:55	6°♄05'25	10.16117 AU				
morning rise	5007 Aug 13 22:09	8°♄23'10		conjunction	5013 Oct 20 11:22	28°♄43'02	1°59'27



minimum elong	5013 Oct 20 11:20	28° $\mathfrak{A}$ 43'01	1°59'28	conjunction	5020 Jan 05 15:28	14° $\mathfrak{Z}$ 24'16	1°15'03
max. Earth dist.	5013 Oct 20 11:06	28° $\mathfrak{A}$ 42'56	10.30070 AU	minimum elong	5020 Jan 05 15:30	14° $\mathfrak{Z}$ 24'16	1°15'04
	5013 Oct 30 15:00	0° $\mathfrak{M}$		max. Earth dist.	5020 Jan 05 12:57	14° $\mathfrak{Z}$ 23'30	10.81928 AU
morning rise	5013 Nov 07 01:10	0° $\mathfrak{M}$ 55'40		morning rise	5020 Jan 22 11:19	16° $\mathfrak{Z}$ 25'13	
retrograde	5014 Feb 16 18:30	8° $\mathfrak{M}$ 40'12		retrograde	5020 May 01 10:04	23° $\mathfrak{Z}$ 34'13	
opposition	5014 Apr 24 18:44	5° $\mathfrak{M}$ 16'32	2°33'44	opposition	5020 Jul 09 13:44	20° $\mathfrak{Z}$ 16'00	1°18'27
min. Earth dist.	5014 Apr 24 18:45	5° $\mathfrak{M}$ 16'32	8.34254 AU	min. Earth dist.	5020 Jul 09 15:19	20° $\mathfrak{Z}$ 15'42	8.85094 AU
direct	5014 Jul 02 16:21	1° $\mathfrak{M}$ 48'31		direct	5020 Sep 18 09:21	16° $\mathfrak{Z}$ 54'01	
evening set	5014 Oct 16 19:19	9° $\mathfrak{M}$ 46'55		evening set	5020 Dec 30 18:00	24° $\mathfrak{Z}$ 13'13	
conjunction	5014 Nov 03 08:55	11° $\mathfrak{M}$ 58'28	2°07'01	conjunction	5021 Jan 16 15:04	26° $\mathfrak{Z}$ 13'53	0°52'01
minimum elong	5014 Nov 03 08:53	11° $\mathfrak{M}$ 58'27	2°07'01	minimum elong	5021 Jan 16 15:06	26° $\mathfrak{Z}$ 13'53	0°52'02
max. Earth dist.	5014 Nov 03 08:14	11° $\mathfrak{M}$ 58'15	10.38430 AU	max. Earth dist.	5021 Jan 16 12:53	26° $\mathfrak{Z}$ 13'14	10.87804 AU
morning rise	5014 Nov 20 18:37	14° $\mathfrak{M}$ 08'48		morning rise	5021 Feb 02 09:33	28° $\mathfrak{Z}$ 13'49	
	5014 Nov 27 18:48	15° $\mathfrak{M}$			5021 Feb 17 21:39	0° $\approx$	
retrograde	5015 Mar 01 21:32	21° $\mathfrak{M}$ 46'15		retrograde	5021 May 13 12:18	5° $\approx$ 20'27	
opposition	5015 May 08 03:57	18° $\mathfrak{M}$ 23'50	2°38'42	opposition	5021 Jul 22 00:53	2° $\approx$ 02'26	0°48'46
min. Earth dist.	5015 May 08 03:48	18° $\mathfrak{M}$ 23'52	8.43049 AU	min. Earth dist.	5021 Jul 22 02:22	2° $\approx$ 02'09	8.90134 AU
	5015 Jul 08 11:40	15° $\mathfrak{R}$ $\mathfrak{M}$			5021 Aug 20 10:14	30° $\mathfrak{R}$ $\mathfrak{Z}$	
direct	5015 Jul 16 13:03	14° $\mathfrak{M}$ 56'39		direct	5021 Sep 30 21:12	28° $\mathfrak{Z}$ 41'22	
	5015 Jul 24 13:53	15° $\mathfrak{M}$			5021 Nov 10 09:31	0° $\approx$	
evening set	5015 Oct 30 12:03	22° $\mathfrak{M}$ 49'11		evening set	5022 Jan 11 14:52	5° $\approx$ 55'48	
conjunction	5015 Nov 16 22:05	24° $\mathfrak{M}$ 58'30	2°07'54	conjunction	5022 Jan 28 10:25	7° $\approx$ 55'32	0°27'01
minimum elong	5015 Nov 16 22:05	24° $\mathfrak{M}$ 58'30	2°07'54	minimum elong	5022 Jan 28 10:25	7° $\approx$ 55'32	0°27'02
max. Earth dist.	5015 Nov 16 21:42	24° $\mathfrak{M}$ 58'23	10.47537 AU	max. Earth dist.	5022 Jan 28 08:14	7° $\approx$ 54'53	10.92015 AU
morning rise	5015 Dec 04 03:55	27° $\mathfrak{M}$ 06'33		morning rise	5022 Feb 14 03:58	9° $\approx$ 54'44	
	5015 Dec 29 01:41	0° $\mathfrak{Z}$			5022 Apr 05 16:00	15° $\approx$	
retrograde	5016 Mar 13 19:19	4° $\mathfrak{Z}$ 36'59		retrograde	5022 May 25 14:49	17° $\approx$ 00'23	
opposition	5016 May 20 09:13	1° $\mathfrak{Z}$ 15'44	2°35'32		5022 Jul 16 13:16	15° $\mathfrak{R}$ $\approx$	
min. Earth dist.	5016 May 20 08:57	1° $\mathfrak{Z}$ 15'47	8.52340 AU	opposition	5022 Aug 03 10:27	13° $\approx$ 42'19	0°17'21
	5016 Jun 05 22:06	30° $\mathfrak{R}$ $\mathfrak{M}$		min. Earth dist.	5022 Aug 03 12:29	13° $\approx$ 41'56	8.93465 AU
direct	5016 Jul 29 04:35	27° $\mathfrak{M}$ 49'33		direct	5022 Oct 13 05:27	10° $\approx$ 22'00	
	5016 Sep 19 03:01	0° $\mathfrak{Z}$			5022 Dec 31 11:56	15° $\approx$	
evening set	5016 Nov 11 19:41	5° $\mathfrak{Z}$ 35'21		evening set	5023 Jan 23 08:37	17° $\approx$ 32'42	
conjunction	5016 Nov 29 02:25	7° $\mathfrak{Z}$ 42'30	2°02'26	conjunction	5023 Feb 09 02:44	19° $\approx$ 31'47	0°01'06
minimum elong	5016 Nov 29 02:26	7° $\mathfrak{Z}$ 42'30	2°02'26	minimum elong	5023 Feb 09 02:43	19° $\approx$ 31'47	0°01'06
max. Earth dist.	5016 Nov 29 02:22	7° $\mathfrak{Z}$ 42'29	10.56913 AU	behind sun begin	5023 Feb 08 19:43	19° $\approx$ 29'43	
morning rise	5016 Dec 16 04:48	9° $\mathfrak{Z}$ 48'23		behind sun end	5023 Feb 09 09:42	19° $\approx$ 33'50	
retrograde	5017 Mar 26 12:41	17° $\mathfrak{Z}$ 12'10		max. Earth dist.	5023 Feb 08 23:50	19° $\approx$ 30'59	10.94468 AU
opposition	5017 Jun 02 10:16	13° $\mathfrak{Z}$ 51'58	2°24'53	desc. node	5023 Feb 24 09:49	21° $\approx$ 20'38	
min. Earth dist.	5017 Jun 02 10:26	13° $\mathfrak{Z}$ 51'56	8.61653 AU	morning rise	5023 Feb 25 19:46	21° $\approx$ 30'34	
direct	5017 Aug 11 13:15	10° $\mathfrak{Z}$ 26'51		retrograde	5023 Jun 06 15:08	28° $\approx$ 36'33	
evening set	5017 Nov 24 18:37	18° $\mathfrak{Z}$ 05'31		opposition	5023 Aug 15 19:05	25° $\approx$ 18'10	0°-14'-34
conjunction	5017 Dec 11 22:19	20° $\mathfrak{Z}$ 10'40	1°51'14	min. Earth dist.	5023 Aug 15 21:29	25° $\approx$ 17'43	8.95021 AU
minimum elong	5017 Dec 11 22:21	20° $\mathfrak{Z}$ 10'41	1°51'14	direct	5023 Oct 25 09:56	21° $\approx$ 58'24	
max. Earth dist.	5017 Dec 11 21:49	20° $\mathfrak{Z}$ 10'31	10.66082 AU	evening set	5024 Feb 04 00:29	29° $\approx$ 06'32	
morning rise	5017 Dec 28 21:58	22° $\mathfrak{Z}$ 14'39			5024 Feb 11 14:19	0° $\mathfrak{X}$	
retrograde	5018 Apr 07 23:24	29° $\mathfrak{Z}$ 32'24		conjunction	5024 Feb 20 17:32	1° $\mathfrak{X}$ 05'14	0°-24'-51
opposition	5018 Jun 15 06:58	26° $\mathfrak{Z}$ 13'04	2°07'44	minimum elong	5024 Feb 20 17:31	1° $\mathfrak{X}$ 05'14	0°24'52
min. Earth dist.	5018 Jun 15 08:11	26° $\mathfrak{Z}$ 12'51	8.70519 AU	max. Earth dist.	5024 Feb 20 14:31	1° $\mathfrak{X}$ 04'21	10.95121 AU
direct	5018 Aug 24 16:49	22° $\mathfrak{Z}$ 49'01		morning rise	5024 Mar 08 10:25	3° $\mathfrak{X}$ 03'54	
	5018 Dec 04 11:34	0° $\mathfrak{Z}$		retrograde	5024 Jun 17 16:56	10° $\mathfrak{X}$ 11'34	
evening set	5018 Dec 07 09:21	0° $\mathfrak{Z}$ 20'38		opposition	5024 Aug 27 03:21	6° $\mathfrak{X}$ 52'35	0°-45'-51
conjunction	5018 Dec 24 10:22	2° $\mathfrak{Z}$ 24'00	1°35'07	min. Earth dist.	5024 Aug 27 05:16	6° $\mathfrak{X}$ 52'14	8.94780 AU
minimum elong	5018 Dec 24 10:25	2° $\mathfrak{Z}$ 24'01	1°35'08	direct	5024 Nov 05 14:37	3° $\mathfrak{X}$ 33'11	
max. Earth dist.	5018 Dec 24 08:31	2° $\mathfrak{Z}$ 23'26	10.74572 AU	evening set	5025 Feb 14 15:43	10° $\mathfrak{X}$ 39'57	
morning rise	5019 Jan 10 07:55	4° $\mathfrak{Z}$ 26'20		conjunction	5025 Mar 03 08:12	12° $\mathfrak{X}$ 38'36	0°-49'-44
retrograde	5019 Apr 20 05:35	11° $\mathfrak{Z}$ 39'04		minimum elong	5025 Mar 03 08:11	12° $\mathfrak{X}$ 38'35	0°49'45
opposition	5019 Jun 28 00:00	8° $\mathfrak{Z}$ 20'24	1°45'11	max. Earth dist.	5025 Mar 03 06:24	12° $\mathfrak{X}$ 38'03	10.93963 AU
min. Earth dist.	5019 Jun 28 01:43	8° $\mathfrak{Z}$ 20'05	8.78470 AU	morning rise	5025 Mar 20 01:06	14° $\mathfrak{X}$ 37'24	
direct	5019 Sep 06 16:31	4° $\mathfrak{Z}$ 57'23		retrograde	5025 Jun 29 23:12	21° $\mathfrak{X}$ 48'02	
evening set	5019 Dec 19 16:39	12° $\mathfrak{Z}$ 22'24		opposition	5025 Sep 08 12:04	18° $\mathfrak{X}$ 28'16	-1°-15'-20
				min. Earth dist.	5025 Sep 08 12:57	18° $\mathfrak{X}$ 28'06	8.92751 AU



direct	5025 Nov 17 17:07	15° <del>✕</del> 09'03		min. Earth dist.	5031 Nov 22 17:04	0° <del>II</del> 52'25	8.51773 AU
evening set	5026 Feb 26 07:58	22° <del>✕</del> 15'40			5031 Dec 04 00:31	30° <del>R</del> 8	
				direct	5032 Jan 29 12:50	27° <del>8</del> 30'22	
conjunction	5026 Mar 15 00:09	24° <del>✕</del> 14'34	-1°-12'-41		5032 Mar 23 16:41	0° <del>II</del>	
minimum elong	5026 Mar 15 00:07	24° <del>✕</del> 14'33	1°12'42	evening set	5032 May 09 00:30	4° <del>II</del> 59'33	
max. Earth dist.	5026 Mar 14 23:06	24° <del>✕</del> 14'15	10.91039 AU				
morning rise	5026 Mar 31 17:25	26° <del>✕</del> 13'51		conjunction	5032 May 26 04:27	7° <del>II</del> 07'12	-2°-2'-51
	5026 May 05 16:50	0° <del>Y</del>		minimum elong	5032 May 26 04:29	7° <del>II</del> 07'13	2°02'53
retrograde	5026 Jul 12 06:33	3° <del>Y</del> 28'37		max. Earth dist.	5032 May 26 05:46	7° <del>II</del> 07'37	10.47159 AU
opposition	5026 Sep 20 22:03	0° <del>Y</del> 07'55	-1°-41'-56	morning rise	5032 Jun 12 12:53	9° <del>II</del> 16'15	
min. Earth dist.	5026 Sep 20 22:31	0° <del>Y</del> 07'49	8.89015 AU	retrograde	5032 Sep 26 14:08	17° <del>II</del> 09'35	
	5026 Sep 22 16:19	30° <del>R</del> ✕		opposition	5032 Dec 05 00:56	13° <del>II</del> 42'37	-2°-25'-33
direct	5026 Nov 29 17:34	26° <del>✕</del> 48'42		min. Earth dist.	5032 Dec 04 23:23	13° <del>II</del> 42'55	8.42842 AU
	5027 Feb 01 09:08	0° <del>Y</del>		direct	5033 Feb 10 10:42	10° <del>II</del> 20'00	
evening set	5027 Mar 10 02:28	3° <del>Y</del> 56'28		evening set	5033 May 22 07:05	17° <del>II</del> 55'34	
conjunction	5027 Mar 26 18:43	5° <del>Y</del> 55'56	-1°-32'-46	conjunction	5033 Jun 08 15:29	20° <del>II</del> 05'40	-1°-51'-7
minimum elong	5027 Mar 26 18:41	5° <del>Y</del> 55'55	1°32'47	minimum elong	5033 Jun 08 15:31	20° <del>II</del> 05'41	1°51'09
max. Earth dist.	5027 Mar 26 17:30	5° <del>Y</del> 55'34	10.86477 AU	max. Earth dist.	5033 Jun 08 17:09	20° <del>II</del> 06'11	10.38444 AU
morning rise	5027 Apr 12 13:00	7° <del>Y</del> 56'01		morning rise	5033 Jun 26 04:20	22° <del>II</del> 17'08	
retrograde	5027 Jul 24 18:23	15° <del>Y</del> 15'59			5033 Sep 22 16:58	0° <del>8</del>	
opposition	5027 Oct 03 10:14	11° <del>Y</del> 54'14	-2°-4'-32	retrograde	5033 Oct 10 10:06	0° <del>8</del> 16'21	
min. Earth dist.	5027 Oct 03 10:51	11° <del>Y</del> 54'07	8.83725 AU		5033 Oct 28 04:46	30° <del>R</del> II	
direct	5027 Dec 11 20:55	8° <del>Y</del> 34'51		opposition	5033 Dec 18 11:14	26° <del>II</del> 48'41	-2°-7'-26
evening set	5028 Mar 21 00:15	15° <del>Y</del> 44'55		min. Earth dist.	5033 Dec 18 09:33	26° <del>II</del> 49'01	8.34408 AU
				direct	5034 Feb 23 14:35	23° <del>II</del> 25'07	
conjunction	5028 Apr 06 17:18	17° <del>Y</del> 45'19	-1°-49'-8		5034 May 26 18:06	0° <del>8</del>	
minimum elong	5028 Apr 06 17:16	17° <del>Y</del> 45'19	1°49'09	evening set	5034 Jun 04 21:47	1° <del>8</del> 07'10	
max. Earth dist.	5028 Apr 06 16:13	17° <del>Y</del> 45'00	10.80453 AU				
morning rise	5028 Apr 23 13:11	19° <del>Y</del> 46'35		conjunction	5034 Jun 22 10:55	3° <del>8</del> 19'43	-1°-33'-22
retrograde	5028 Aug 05 10:48	27° <del>Y</del> 12'36		minimum elong	5034 Jun 22 10:58	3° <del>8</del> 19'44	1°33'24
opposition	5028 Oct 15 01:03	23° <del>Y</del> 49'45	-2°-22'-8	max. Earth dist.	5034 Jun 22 13:36	3° <del>8</del> 20'34	10.30464 AU
min. Earth dist.	5028 Oct 15 01:25	23° <del>Y</del> 49'41	8.77070 AU	morning rise	5034 Jul 10 04:07	5° <del>8</del> 33'32	
direct	5028 Dec 23 01:42	20° <del>Y</del> 30'00		retrograde	5034 Oct 24 11:07	13° <del>8</del> 37'32	
evening set	5029 Apr 02 02:46	27° <del>Y</del> 43'31		opposition	5035 Jan 01 01:19	10° <del>8</del> 09'24	-1°-42'-8
				min. Earth dist.	5034 Dec 31 23:00	10° <del>8</del> 09'52	8.26937 AU
conjunction	5029 Apr 18 21:27	29° <del>Y</del> 45'15	-2°00'-57	direct	5035 Mar 08 23:34	6° <del>8</del> 44'50	
minimum elong	5029 Apr 18 21:26	29° <del>Y</del> 45'14	2°00'59	evening set	5035 Jun 18 20:46	14° <del>8</del> 33'15	
max. Earth dist.	5029 Apr 18 21:29	29° <del>Y</del> 45'15	10.73183 AU				
	5029 Apr 20 21:54	0° <del>8</del>		conjunction	5035 Jul 06 14:29	16° <del>8</del> 48'04	-1°-10'-17
morning rise	5029 May 05 19:25	1° <del>8</del> 47'59		minimum elong	5035 Jul 06 14:32	16° <del>8</del> 48'05	1°10'19
retrograde	5029 Aug 18 07:58	9° <del>8</del> 20'41		max. Earth dist.	5035 Jul 06 18:09	16° <del>8</del> 49'14	10.23665 AU
opposition	5029 Oct 27 18:57	5° <del>8</del> 56'41	-2°-33'-45	morning rise	5035 Jul 24 11:36	19° <del>8</del> 03'59	
min. Earth dist.	5029 Oct 27 18:25	5° <del>8</del> 56'48	8.69300 AU	retrograde	5035 Nov 07 15:21	27° <del>8</del> 11'17	
direct	5030 Jan 04 10:16	2° <del>8</del> 36'26		opposition	5036 Jan 14 18:26	23° <del>8</del> 42'54	-1°-10'-46
evening set	5030 Apr 14 11:01	9° <del>8</del> 54'25		min. Earth dist.	5036 Jan 14 15:28	23° <del>8</del> 43'30	8.20853 AU
				direct	5036 Mar 21 14:02	20° <del>8</del> 17'23	
conjunction	5030 May 01 08:06	11° <del>8</del> 57'49	-2°-7'-32	evening set	5036 Jul 02 03:17	28° <del>8</del> 11'42	
minimum elong	5030 May 01 08:05	11° <del>8</del> 57'49	2°07'34		5036 Jul 16 08:15	0° <del>8</del>	
max. Earth dist.	5030 May 01 09:17	11° <del>8</del> 58'11	10.64960 AU				
morning rise	5030 May 18 08:47	14° <del>8</del> 02'23		conjunction	5036 Jul 20 00:54	0° <del>8</del> 28'24	0°-43'00
	5030 May 26 11:04	15° <del>8</del>		minimum elong	5036 Jul 20 00:56	0° <del>8</del> 28'24	0°43'01
retrograde	5030 Aug 31 12:52	21° <del>8</del> 42'07		max. Earth dist.	5036 Jul 20 04:38	0° <del>8</del> 29'36	10.18431 AU
opposition	5030 Nov 09 16:49	18° <del>8</del> 17'01	-2°-38'-34	morning rise	5036 Aug 07 01:04	2° <del>8</del> 45'56	
min. Earth dist.	5030 Nov 09 15:17	18° <del>8</del> 17'18	8.60738 AU	retrograde	5036 Nov 20 21:12	10° <del>8</del> 54'53	
	5031 Jan 08 07:33	15° <del>R</del> 8		opposition	5037 Jan 27 14:09	7° <del>8</del> 26'32	0°-34'-58
direct	5031 Jan 16 21:34	14° <del>8</del> 56'07		min. Earth dist.	5037 Jan 27 11:14	7° <del>8</del> 27'08	8.16499 AU
	5031 Jan 25 10:19	15° <del>8</del>		direct	5037 Apr 04 09:32	4° <del>8</del> 00'05	
evening set	5031 Apr 27 01:55	22° <del>8</del> 19'20		evening set	5037 Jul 16 15:47	11° <del>8</del> 59'27	
conjunction	5031 May 14 02:05	24° <del>8</del> 24'44	-2°-8'-17	conjunction	5037 Aug 03 16:09	14° <del>8</del> 17'27	0°-13'-1
minimum elong	5031 May 14 02:05	24° <del>8</del> 24'44	2°08'19	minimum elong	5037 Aug 03 16:10	14° <del>8</del> 17'27	0°13'02
max. Earth dist.	5031 May 14 03:33	24° <del>8</del> 25'12	10.56147 AU	behind sun begin	5037 Aug 03 11:53	14° <del>8</del> 16'06	
morning rise	5031 May 31 06:19	26° <del>8</del> 31'26		behind sun end	5037 Aug 03 20:27	14° <del>8</del> 18'49	
	5031 Jun 30 20:48	0° <del>II</del>		max. Earth dist.	5037 Aug 03 19:22	14° <del>8</del> 18'28	10.15046 AU
retrograde	5031 Sep 13 23:20	4° <del>II</del> 18'11			5037 Aug 09 04:38	15° <del>8</del>	
opposition	5031 Nov 22 18:51	0° <del>II</del> 52'04	-2°-35'-57	morning rise	5037 Aug 21 18:11	16° <del>8</del> 35'59	



retrograde	5037 Dec 05 03:27	24°♏44'50		morning rise	5043 Nov 15 10:05	8°♍53'14	
asc. node	5038 Jan 10 11:44	23°♏35'19			5044 Jan 13 18:15	15°♍	
opposition	5038 Feb 10 11:25	21°♏16'44	0°03'09	retrograde	5044 Feb 24 20:21	16°♍33'54	
min. Earth dist.	5038 Feb 10 09:05	21°♏17'13	8.14102 AU		5044 Apr 07 19:18	15°♍	
direct	5038 Apr 18 08:37	17°♏49'27		opposition	5044 May 01 22:33	13°♍11'01	2°37'34
evening set	5038 Jul 31 08:39	25°♏52'46		min. Earth dist.	5044 May 01 23:12	13°♍10'54	8.39123 AU
				direct	5044 Jul 10 01:44	9°♍43'29	
conjunction	5038 Aug 18 10:28	28°♏11'23	0°17'55		5044 Oct 01 15:08	15°♍	
minimum elong	5038 Aug 18 10:27	28°♏11'23	0°17'55	evening set	5044 Oct 24 04:07	17°♍38'46	
max. Earth dist.	5038 Aug 18 12:28	28°♏12'01	10.13657 AU				
	5038 Sep 01 13:28	0°♐		conjunction	5044 Nov 10 15:41	19°♍49'04	2°08'17
morning rise	5038 Sep 05 12:58	0°♐30'12		minimum elong	5044 Nov 10 15:40	19°♍49'04	2°08'18
retrograde	5038 Dec 19 08:15	8°♐37'16		max. Earth dist.	5044 Nov 10 14:30	19°♍48'42	10.43325 AU
opposition	5039 Feb 24 09:05	5°♐09'40	0°41'13	morning rise	5044 Nov 27 23:04	21°♍58'08	
min. Earth dist.	5039 Feb 24 07:53	5°♐09'55	8.13722 AU	retrograde	5045 Mar 08 19:25	29°♍31'41	
direct	5039 May 02 11:37	1°♐41'41		opposition	5045 May 15 05:42	26°♍09'50	2°37'48
evening set	5039 Aug 15 03:41	9°♐47'43		min. Earth dist.	5045 May 15 06:55	26°♍09'36	8.47919 AU
				direct	5045 Jul 23 20:18	22°♍43'00	
conjunction	5039 Sep 02 05:34	12°♐06'15	0°47'47		5045 Nov 02 05:54	0°♑	
minimum elong	5039 Sep 02 05:32	12°♐06'15	0°47'48	evening set	5045 Nov 06 15:37	0°♑31'52	
max. Earth dist.	5039 Sep 02 06:06	12°♐06'26	10.14245 AU				
morning rise	5039 Sep 20 07:01	14°♐24'39		conjunction	5045 Nov 23 23:40	2°♑39'59	2°05'27
retrograde	5040 Jan 02 09:54	22°♐28'33		minimum elong	5045 Nov 23 23:41	2°♑39'59	2°05'27
opposition	5040 Mar 09 06:25	19°♐01'41	1°16'49	max. Earth dist.	5045 Nov 23 21:48	2°♑39'24	10.52319 AU
min. Earth dist.	5040 Mar 09 05:58	19°♐01'46	8.15305 AU	morning rise	5045 Dec 11 03:39	4°♑46'51	
direct	5040 May 15 16:55	15°♐33'18		retrograde	5046 Mar 21 13:32	12°♑13'31	
evening set	5040 Aug 28 22:37	23°♐40'37		opposition	5046 May 28 08:24	8°♑52'35	2°30'14
				min. Earth dist.	5046 May 28 09:38	8°♑52'21	8.56976 AU
conjunction	5040 Sep 15 23:10	25°♐58'23	1°14'48	direct	5046 Aug 06 08:53	5°♑26'36	
minimum elong	5040 Sep 15 23:07	25°♐58'22	1°14'48	evening set	5046 Nov 19 18:09	13°♑08'28	
max. Earth dist.	5040 Sep 15 23:02	25°♐58'20	10.16769 AU				
morning rise	5040 Oct 03 22:10	28°♐15'41		conjunction	5046 Dec 06 23:06	15°♑14'32	1°56'35
	5040 Oct 18 02:05	0°♑		minimum elong	5046 Dec 06 23:08	15°♑14'32	1°56'35
retrograde	5041 Jan 15 07:20	6°♑15'13		max. Earth dist.	5046 Dec 06 21:11	15°♑13'56	10.61357 AU
opposition	5041 Mar 23 02:27	2°♑49'14	1°47'46	morning rise	5046 Dec 24 00:05	17°♑19'22	
min. Earth dist.	5041 Mar 23 02:04	2°♑49'19	8.18822 AU	retrograde	5047 Apr 03 02:02	24°♑39'42	
	5041 May 02 17:16	30°♒♐		opposition	5047 Jun 10 06:40	21°♑19'34	2°15'43
direct	5041 May 29 22:47	29°♐20'44		min. Earth dist.	5047 Jun 10 07:23	21°♑19'26	8.65844 AU
	5041 Jun 26 00:34	0°♑		direct	5047 Aug 19 15:42	17°♑54'34	
evening set	5041 Sep 12 15:01	7°♑27'35		evening set	5047 Dec 02 12:02	25°♑29'17	
conjunction	5041 Sep 30 13:11	9°♑44'01	1°37'20	conjunction	5047 Dec 19 14:20	27°♑33'28	1°42'27
minimum elong	5041 Sep 30 13:08	9°♑44'00	1°37'21	minimum elong	5047 Dec 19 14:22	27°♑33'29	1°42'27
max. Earth dist.	5041 Sep 30 13:00	9°♑43'57	10.21193 AU	max. Earth dist.	5047 Dec 19 13:13	27°♑33'07	10.70008 AU
morning rise	5041 Oct 18 08:43	11°♑59'39		morning rise	5048 Jan 05 12:45	29°♑36'32	
retrograde	5042 Jan 29 00:54	19°♑53'42			5048 Jan 08 19:48	0°♒	
opposition	5042 Apr 05 20:20	16°♑28'42	2°12'14	retrograde	5048 Apr 14 10:55	6°♒51'23	
min. Earth dist.	5042 Apr 05 19:53	16°♑28'47	8.24167 AU	opposition	5048 Jun 22 01:06	3°♒31'56	1°55'18
direct	5042 Jun 13 02:09	13°♑00'17		min. Earth dist.	5048 Jun 22 01:44	3°♒31'49	8.74127 AU
evening set	5042 Sep 27 02:35	21°♑04'52		direct	5048 Aug 31 16:23	0°♒07'58	
				evening set	5048 Dec 13 22:03	7°♒35'46	
conjunction	5042 Oct 14 21:36	23°♑19'31	1°54'11				
minimum elong	5042 Oct 14 21:33	23°♑19'30	1°54'12	conjunction	5048 Dec 30 22:00	9°♒38'19	1°23'57
max. Earth dist.	5042 Oct 14 21:29	23°♑19'29	10.27331 AU	minimum elong	5048 Dec 30 22:02	9°♒38'20	1°23'57
morning rise	5042 Nov 01 13:05	25°♑33'06		max. Earth dist.	5048 Dec 30 21:04	9°♒38'02	10.77890 AU
	5042 Dec 10 18:26	0°♒		morning rise	5049 Jan 16 18:28	11°♒39'53	
retrograde	5043 Feb 11 14:12	3°♒20'44		retrograde	5049 Apr 26 16:40	18°♒50'20	
	5043 Apr 18 19:17	30°♒♑		opposition	5049 Jul 04 15:56	15°♒31'25	1°30'12
opposition	5043 Apr 19 11:16	29°♑56'47	2°29'02	min. Earth dist.	5049 Jul 04 17:03	15°♒31'12	8.81473 AU
min. Earth dist.	5043 Apr 19 11:05	29°♑56'50	8.31060 AU	direct	5049 Sep 13 10:02	12°♒08'29	
direct	5043 Jun 27 03:21	26°♑28'42		evening set	5049 Dec 26 01:38	19°♒29'59	
	5043 Sep 01 10:41	0°♒					
evening set	5043 Oct 11 07:29	4°♒29'21		conjunction	5050 Jan 11 23:27	21°♒31'10	1°02'03
				minimum elong	5050 Jan 11 23:29	21°♒31'11	1°02'05
conjunction	5043 Oct 28 22:49	6°♒41'54	2°04'35	max. Earth dist.	5050 Jan 11 21:49	21°♒30'41	10.84673 AU
minimum elong	5043 Oct 28 22:47	6°♒41'53	2°04'36	morning rise	5050 Jan 28 18:33	23°♒31'33	
max. Earth dist.	5043 Oct 28 22:29	6°♒41'48	10.34844 AU		5050 Apr 11 01:43	0°♓	



retrograde	5050 May 08 17:27	0° $\approx$ 38'47		conjunction	5056 Mar 21 00:03	1° $\Upsilon$ 03'45	-1°-24'-17
	5050 Jun 05 20:54	30° $\Re$		minimum elong	5056 Mar 21 00:01	1° $\Upsilon$ 03'44	1°24'18
opposition	5050 Jul 17 03:38	27° $\mathfrak{C}$ 20'15	1°01'38	max. Earth dist.	5056 Mar 21 00:03	1° $\Upsilon$ 03'44	10.91384 AU
min. Earth dist.	5050 Jul 17 05:10	27° $\mathfrak{C}$ 19'57	8.87579 AU	morning rise	5056 Apr 06 17:44	3° $\Upsilon$ 03'06	
direct	5050 Sep 26 00:11	23° $\mathfrak{C}$ 58'19		retrograde	5056 Jul 18 14:57	10° $\Upsilon$ 19'24	
	5050 Dec 27 04:49	0° $\approx$		opposition	5056 Sep 27 07:19	6° $\Upsilon$ 58'46	-1°-54'-58
evening set	5051 Jan 06 23:53	1° $\approx$ 14'26		min. Earth dist.	5056 Sep 27 06:47	6° $\Upsilon$ 58'52	8.89187 AU
				direct	5056 Dec 05 23:32	3° $\Upsilon$ 40'10	
conjunction	5051 Jan 23 19:56	3° $\approx$ 14'29	0°37'48	evening set	5057 Mar 16 03:27	10° $\Upsilon$ 47'49	
minimum elong	5051 Jan 23 19:58	3° $\approx$ 14'29	0°37'50				
max. Earth dist.	5051 Jan 23 17:56	3° $\approx$ 13'53	10.90082 AU	conjunction	5057 Apr 01 20:03	12° $\Upsilon$ 47'24	-1°-42'-18
morning rise	5051 Feb 09 14:02	5° $\approx$ 13'56		minimum elong	5057 Apr 01 20:01	12° $\Upsilon$ 47'23	1°42'19
retrograde	5051 May 20 18:30	12° $\approx$ 19'23		max. Earth dist.	5057 Apr 01 20:50	12° $\Upsilon$ 47'38	10.86432 AU
opposition	5051 Jul 29 13:15	9° $\approx$ 00'59	0°30'52	morning rise	5057 Apr 18 14:51	14° $\Upsilon$ 47'42	
min. Earth dist.	5051 Jul 29 14:10	9° $\approx$ 00'49	8.92199 AU	retrograde	5057 Jul 31 05:19	22° $\Upsilon$ 09'31	
direct	5051 Oct 08 10:37	5° $\approx$ 40'01		opposition	5057 Oct 09 19:53	18° $\Upsilon$ 47'55	-2°-14'-46
evening set	5052 Jan 18 18:00	12° $\approx$ 51'41		min. Earth dist.	5057 Oct 09 18:54	18° $\Upsilon$ 48'06	8.83490 AU
				direct	5057 Dec 18 01:14	15° $\Upsilon$ 29'10	
conjunction	5052 Feb 04 12:43	14° $\approx$ 50'55	0°12'13	evening set	5058 Mar 28 02:57	22° $\Upsilon$ 39'36	
minimum elong	5052 Feb 04 12:43	14° $\approx$ 50'55	0°12'14				
behind sun begin	5052 Feb 04 07:58	14° $\approx$ 49'31		conjunction	5058 Apr 13 20:35	24° $\Upsilon$ 40'16	-1°-56'-10
behind sun end	5052 Feb 04 17:28	14° $\approx$ 52'19		minimum elong	5058 Apr 13 20:34	24° $\Upsilon$ 40'16	1°56'11
max. Earth dist.	5052 Feb 04 11:41	14° $\approx$ 50'37	10.93896 AU	max. Earth dist.	5058 Apr 13 20:50	24° $\Upsilon$ 40'21	10.79981 AU
	5052 Feb 05 19:11	15° $\approx$		morning rise	5058 Apr 30 17:14	26° $\Upsilon$ 41'52	
morning rise	5052 Feb 21 05:58	16° $\approx$ 49'45			5058 May 30 10:32	0° $\mathfrak{C}$	
retrograde	5052 May 31 19:41	23° $\approx$ 54'46		retrograde	5058 Aug 12 23:16	4° $\mathfrak{C}$ 09'57	
desc. node	5052 Jul 30 01:58	21° $\approx$ 24'06		opposition	5058 Oct 22 11:30	0° $\mathfrak{C}$ 47'18	-2°-29'-3
opposition	5052 Aug 09 21:24	20° $\approx$ 36'19	0°00'-54	min. Earth dist.	5058 Oct 22 11:02	0° $\mathfrak{C}$ 47'23	8.76377 AU
min. Earth dist.	5052 Aug 09 21:34	20° $\approx$ 36'17	8.95153 AU		5058 Nov 01 23:07	30° $\Re$ $\Upsilon$	
direct	5052 Oct 19 15:42	17° $\approx$ 16'12		direct	5058 Dec 30 06:27	27° $\Upsilon$ 28'07	
evening set	5053 Jan 29 09:47	24° $\approx$ 24'35			5059 Feb 23 18:28	0° $\mathfrak{C}$	
				evening set	5059 Apr 09 07:37	4° $\mathfrak{C}$ 42'28	
conjunction	5053 Feb 15 03:22	26° $\approx$ 23'16	0°-13'-48				
minimum elong	5053 Feb 15 03:21	26° $\approx$ 23'15	0°13'49	conjunction	5059 Apr 26 03:08	6° $\mathfrak{C}$ 44'37	-2°-5'-7
behind sun begin	5053 Feb 14 23:33	26° $\approx$ 22'08		minimum elong	5059 Apr 26 03:07	6° $\mathfrak{C}$ 44'37	2°05'09
behind sun end	5053 Feb 15 07:10	26° $\approx$ 24'23		max. Earth dist.	5059 Apr 26 02:43	6° $\mathfrak{C}$ 44'29	10.72229 AU
max. Earth dist.	5053 Feb 15 02:59	26° $\approx$ 23'09	10.95970 AU	morning rise	5059 May 13 02:23	8° $\mathfrak{C}$ 47'52	
morning rise	5053 Mar 03 20:07	28° $\approx$ 21'45			5059 Jul 15 15:53	15° $\mathfrak{C}$	
	5053 Mar 18 06:24	0° $\mathfrak{H}$		retrograde	5059 Aug 25 23:35	16° $\mathfrak{C}$ 22'47	
retrograde	5053 Jun 12 21:17	5° $\mathfrak{H}$ 27'42			5059 Oct 07 00:54	15° $\Re$ $\mathfrak{C}$	
opposition	5053 Aug 22 04:46	2° $\mathfrak{H}$ 09'00	0°-32'-30	opposition	5059 Nov 04 06:38	12° $\mathfrak{C}$ 59'02	-2°-36'-57
min. Earth dist.	5053 Aug 22 04:56	2° $\mathfrak{H}$ 08'58	8.96336 AU	min. Earth dist.	5059 Nov 04 06:42	12° $\mathfrak{C}$ 59'01	8.68079 AU
	5053 Sep 22 17:13	30° $\Re$ $\approx$		direct	5060 Jan 11 15:50	9° $\mathfrak{C}$ 39'12	
direct	5053 Oct 31 18:35	28° $\approx$ 49'33			5060 Apr 03 19:58	15° $\mathfrak{C}$	
	5053 Dec 08 21:43	0° $\mathfrak{H}$		evening set	5060 Apr 20 18:22	16° $\mathfrak{C}$ 58'29	
evening set	5054 Feb 10 00:34	5° $\mathfrak{H}$ 55'55					
				conjunction	5060 May 07 16:46	19° $\mathfrak{C}$ 02'30	-2°-8'-31
conjunction	5054 Feb 26 17:09	7° $\mathfrak{H}$ 54'20	0°-39'-8	minimum elong	5060 May 07 16:46	19° $\mathfrak{C}$ 02'30	2°08'34
minimum elong	5054 Feb 26 17:08	7° $\mathfrak{H}$ 54'20	0°39'09	max. Earth dist.	5060 May 07 16:35	19° $\mathfrak{C}$ 02'26	10.63462 AU
max. Earth dist.	5054 Feb 26 16:16	7° $\mathfrak{H}$ 54'04	10.96233 AU	morning rise	5060 May 24 19:13	21° $\mathfrak{C}$ 07'46	
morning rise	5054 Mar 15 09:53	9° $\mathfrak{H}$ 52'48		retrograde	5060 Sep 07 05:06	28° $\mathfrak{C}$ 49'48	
retrograde	5054 Jun 25 00:27	17° $\mathfrak{H}$ 00'58		opposition	5060 Nov 16 05:41	25° $\mathfrak{C}$ 24'55	-2°-37'-46
opposition	5054 Sep 03 12:30	13° $\mathfrak{H}$ 41'50	-1°-2'-47	min. Earth dist.	5060 Nov 16 05:35	25° $\mathfrak{C}$ 24'56	8.58954 AU
min. Earth dist.	5054 Sep 03 13:09	13° $\mathfrak{H}$ 41'43	8.95708 AU	direct	5061 Jan 23 05:12	22° $\mathfrak{C}$ 04'15	
direct	5054 Nov 12 19:39	10° $\mathfrak{H}$ 22'53		evening set	5061 May 03 12:22	29° $\mathfrak{C}$ 29'17	
evening set	5055 Feb 21 15:29	17° $\mathfrak{H}$ 28'27			5061 May 07 17:09	0° $\Pi$	
conjunction	5055 Mar 10 07:29	19° $\mathfrak{H}$ 26'54	-1°-2'-57	conjunction	5061 May 20 14:24	1° $\Pi$ 35'29	-2°-5'-56
minimum elong	5055 Mar 10 07:27	19° $\mathfrak{H}$ 26'53	1°02'57	minimum elong	5061 May 20 14:25	1° $\Pi$ 35'30	2°05'58
max. Earth dist.	5055 Mar 10 06:30	19° $\mathfrak{H}$ 26'37	10.94686 AU	max. Earth dist.	5061 May 20 15:09	1° $\Pi$ 35'43	10.54111 AU
morning rise	5055 Mar 27 00:32	21° $\mathfrak{H}$ 25'40		morning rise	5061 Jun 06 20:33	3° $\Pi$ 43'01	
retrograde	5055 Jul 07 04:39	28° $\mathfrak{H}$ 37'21		retrograde	5061 Sep 20 16:31	11° $\Pi$ 32'02	
opposition	5055 Sep 15 21:10	25° $\mathfrak{H}$ 17'33	-1°-30'-38	opposition	5061 Nov 29 08:49	8° $\Pi$ 06'02	-2°-30'-59
min. Earth dist.	5055 Sep 15 21:27	25° $\mathfrak{H}$ 17'30	8.93299 AU	min. Earth dist.	5061 Nov 29 07:54	8° $\Pi$ 06'13	8.49492 AU
direct	5055 Nov 24 20:44	21° $\mathfrak{H}$ 58'53		direct	5062 Feb 04 23:57	4° $\Pi$ 44'24	
evening set	5056 Mar 04 08:02	29° $\mathfrak{H}$ 04'54		evening set	5062 May 16 14:10	12° $\Pi$ 15'42	
	5056 Mar 12 02:43	0° $\Upsilon$					



conjunction	5062 Jun 02 20:24	14°II24'20	-1°-57'-7	opposition	5068 Feb 18 05:59	28°Ω54'50	0°23'29
minimum elong	5062 Jun 02 20:26	14°II24'21	1°57'09	min. Earth dist.	5068 Feb 18 04:25	28°Ω55'10	8.12454 AU
max. Earth dist.	5062 Jun 02 21:29	14°II24'41	10.44696 AU	direct	5068 Apr 25 07:04	25°Ω26'36	
morning rise	5062 Jun 20 06:49	16°II34'19			5068 Jul 08 20:27	0°♊	
retrograde	5062 Oct 04 10:37	24°II29'44		evening set	5068 Aug 07 14:06	3°♊31'46	
opposition	5062 Dec 12 16:17	21°II02'45	-2°-16'-29				
min. Earth dist.	5062 Dec 12 15:00	21°II03'00	8.40212 AU	conjunction	5068 Aug 25 16:22	5°♊50'35	0°33'59
direct	5063 Feb 17 22:57	17°II39'58		minimum elong	5068 Aug 25 16:20	5°♊50'35	0°33'59
evening set	5063 May 30 00:08	25°II17'51		max. Earth dist.	5068 Aug 25 18:07	5°♊51'09	10.12353 AU
				morning rise	5068 Sep 12 18:26	8°♊09'24	
conjunction	5063 Jun 16 10:55	27°II28'59	-1°-42'-10	retrograde	5068 Dec 26 04:38	16°♊15'24	
minimum elong	5063 Jun 16 10:58	27°II29'00	1°42'12	opposition	5069 Mar 03 03:39	12°♊47'31	1°00'33
max. Earth dist.	5063 Jun 16 11:51	27°II29'17	10.35727 AU	min. Earth dist.	5069 Mar 03 02:10	12°♊47'49	8.12844 AU
morning rise	5063 Jul 04 01:55	29°II41'27		direct	5069 May 09 10:40	9°♊18'43	
	5063 Jul 06 14:13	0°♊		evening set	5069 Aug 22 09:14	17°♊25'56	
retrograde	5063 Oct 18 09:22	7°♊42'20					
opposition	5063 Dec 26 03:46	4°♊14'33	-1°-54'-32	conjunction	5069 Sep 09 10:45	19°♊44'20	1°02'33
min. Earth dist.	5063 Dec 26 02:40	4°♊14'46	8.31614 AU	minimum elong	5069 Sep 09 10:42	19°♊44'19	1°02'33
direct	5064 Mar 02 03:51	0°♊50'32		max. Earth dist.	5069 Sep 09 12:05	19°♊44'45	10.13838 AU
evening set	5064 Jun 11 18:28	8°♊35'05		morning rise	5069 Sep 27 11:01	22°♊02'22	
					5069 Dec 31 03:29	0°♊	
conjunction	5064 Jun 29 09:51	10°♊48'38	-1°-21'-32	retrograde	5070 Jan 09 04:54	0°♊04'36	
minimum elong	5064 Jun 29 09:54	10°♊48'39	1°21'33		5070 Jan 18 06:32	30°♊	
max. Earth dist.	5064 Jun 29 10:24	10°♊48'48	10.27678 AU	opposition	5070 Mar 17 00:35	26°♊37'31	1°33'56
morning rise	5064 Jul 17 05:10	13°♊03'24		min. Earth dist.	5070 Mar 16 23:43	26°♊37'41	8.15455 AU
retrograde	5064 Oct 31 10:20	21°♊08'29		direct	5070 May 23 15:29	23°♊08'26	
opposition	5065 Jan 07 18:41	17°♊40'08	-1°-25'-57		5070 Aug 26 20:54	0°♊	
min. Earth dist.	5065 Jan 07 18:00	17°♊40'17	8.24165 AU	evening set	5070 Sep 06 03:13	1°♊16'01	
direct	5065 Mar 15 15:54	14°♊14'53					
evening set	5065 Jun 25 20:33	22°♊05'50		conjunction	5070 Sep 24 02:43	3°♊33'19	1°27'22
				minimum elong	5070 Sep 24 02:40	3°♊33'18	1°27'22
conjunction	5065 Jul 13 16:13	24°♊21'33	0°-56'-8	max. Earth dist.	5070 Sep 24 03:09	3°♊33'27	10.17477 AU
minimum elong	5065 Jul 13 16:15	24°♊21'33	0°56'09	morning rise	5070 Oct 12 00:03	5°♊49'56	
max. Earth dist.	5065 Jul 13 17:00	24°♊21'48	10.20991 AU	retrograde	5071 Jan 23 00:58	13°♊47'04	
morning rise	5065 Jul 31 15:08	26°♊38'16		opposition	5071 Mar 30 19:36	10°♊21'00	2°01'38
	5065 Aug 29 01:20	0°♊		min. Earth dist.	5071 Mar 30 19:19	10°♊21'04	8.20129 AU
retrograde	5065 Nov 14 13:46	4°♊46'05		direct	5071 Jun 06 19:52	6°♊51'57	
opposition	5066 Jan 21 12:40	1°♊17'26	0°-52'-6	evening set	5071 Sep 20 17:29	14°♊58'08	
min. Earth dist.	5066 Jan 21 11:49	1°♊17'36	8.18284 AU				
	5066 Feb 06 18:34	30°♊		conjunction	5071 Oct 08 14:01	17°♊13'47	1°47'00
direct	5066 Mar 29 09:22	27°♊51'02		minimum elong	5071 Oct 08 13:58	17°♊13'46	1°47'00
	5066 May 17 17:37	0°♊		max. Earth dist.	5071 Oct 08 13:45	17°♊13'42	10.23055 AU
evening set	5066 Jul 10 05:23	5°♊47'43		morning rise	5071 Oct 26 07:38	19°♊28'31	
				retrograde	5072 Feb 05 15:37	27°♊19'33	
conjunction	5066 Jul 28 04:35	8°♊05'09	0°-27'-17	opposition	5072 Apr 12 12:06	23°♊54'40	2°22'08
minimum elong	5066 Jul 28 04:36	8°♊05'09	0°27'17	min. Earth dist.	5072 Apr 12 11:59	23°♊54'41	8.26585 AU
max. Earth dist.	5066 Jul 28 05:57	8°♊05'35	10.16040 AU	direct	5072 Jun 19 23:39	20°♊25'59	
morning rise	5066 Aug 15 06:01	10°♊23'17		evening set	5072 Oct 04 01:40	28°♊28'58	
	5066 Sep 24 11:47	15°♊			5072 Oct 16 04:05	0°♊	
retrograde	5066 Nov 28 19:01	18°♊32'12					
opposition	5067 Feb 04 08:46	15°♊03'31	0°-14'-52	conjunction	5072 Oct 21 18:42	0°♊42'37	2°00'29
min. Earth dist.	5067 Feb 04 07:29	15°♊03'47	8.14305 AU	minimum elong	5072 Oct 21 18:40	0°♊42'36	2°00'29
	5067 Feb 05 01:57	15°♊		max. Earth dist.	5072 Oct 21 18:16	0°♊42'29	10.30245 AU
direct	5067 Apr 12 06:21	11°♊36'06		morning rise	5072 Nov 08 08:12	2°♊55'10	
	5067 Jun 14 11:16	15°♊		retrograde	5073 Feb 17 23:58	10°♊39'29	
asc. node	5067 Jul 01 06:21	16°♊47'12		opposition	5073 Apr 26 01:14	7°♊15'49	2°34'33
evening set	5067 Jul 24 19:57	19°♊37'38		min. Earth dist.	5073 Apr 26 00:43	7°♊15'56	8.34447 AU
				direct	5073 Jul 04 00:28	3°♊47'48	
conjunction	5067 Aug 11 21:25	21°♊56'07	0°03'27	evening set	5073 Oct 18 02:24	11°♊46'04	
minimum elong	5067 Aug 11 21:26	21°♊56'08	0°03'28				
behind sun begin	5067 Aug 11 14:09	21°♊53'49		conjunction	5073 Nov 04 15:50	13°♊57'31	2°07'18
behind sun end	5067 Aug 12 04:43	21°♊58'27		minimum elong	5073 Nov 04 15:49	13°♊57'31	2°07'19
max. Earth dist.	5067 Aug 11 23:09	21°♊56'38	10.13104 AU	max. Earth dist.	5073 Nov 04 15:51	13°♊57'31	10.38642 AU
morning rise	5067 Aug 29 23:57	24°♊14'59			5073 Nov 12 22:53	15°♊	
	5067 Oct 21 10:38	0°♊		morning rise	5073 Nov 22 01:11	16°♊07'45	
retrograde	5067 Dec 13 00:56	2°♊23'16		retrograde	5074 Mar 03 03:34	23°♊45'01	
	5068 Feb 04 19:01	30°♊		opposition	5074 May 09 10:24	20°♊22'36	2°38'35



min. Earth dist.	5074 May 09 09:48	20° $\mathbb{M}$ 22'43	8.43276 AU	min. Earth dist.	5080 Jul 23 08:04	3° $\approx$ 57'18	8.90738 AU
direct	5074 Jul 17 20:10	16° $\mathbb{M}$ 55'27		direct	5080 Oct 02 02:47	0° $\approx$ 36'37	
evening set	5074 Oct 31 18:41	24° $\mathbb{M}$ 47'46		evening set	5081 Jan 12 19:09	7° $\approx$ 50'29	
conjunction	5074 Nov 18 04:34	26° $\mathbb{M}$ 57'00	2°07'27	conjunction	5081 Jan 29 14:29	9° $\approx$ 50'06	0°23'58
minimum elong	5074 Nov 18 04:35	26° $\mathbb{M}$ 57'00	2°07'27	minimum elong	5081 Jan 29 14:29	9° $\approx$ 50'07	0°23'58
max. Earth dist.	5074 Nov 18 04:52	26° $\mathbb{M}$ 57'06	10.47782 AU	max. Earth dist.	5081 Jan 29 12:04	9° $\approx$ 49'24	10.92640 AU
morning rise	5074 Dec 05 10:05	29° $\mathbb{M}$ 04'57		morning rise	5081 Feb 15 08:04	11° $\approx$ 49'14	
	5074 Dec 13 00:45	0° $\mathbb{M}$			5081 Mar 16 08:53	15° $\approx$	
retrograde	5075 Mar 16 02:40	6° $\mathbb{M}$ 35'11		retrograde	5081 May 26 18:39	18° $\approx$ 54'36	
opposition	5075 May 22 15:35	3° $\mathbb{M}$ 13'58	2°34'32	opposition	5081 Aug 04 15:51	15° $\approx$ 36'34	0°13'35
min. Earth dist.	5075 May 22 15:30	3° $\mathbb{M}$ 13'59	8.52597 AU	min. Earth dist.	5081 Aug 04 18:05	15° $\approx$ 36'09	8.94098 AU
	5075 Jul 15 21:51	30° $\mathbb{M}$			5081 Aug 12 21:25	15° $\mathbb{M}$	
direct	5075 Jul 31 09:35	29° $\mathbb{M}$ 47'48		direct	5081 Oct 14 09:49	12° $\approx$ 16'21	
	5075 Aug 15 22:41	0° $\mathbb{M}$			5081 Dec 12 19:59	15° $\approx$	
evening set	5075 Nov 14 02:00	7° $\mathbb{M}$ 33'21		desc. node	5082 Jan 12 07:36	18° $\approx$ 02'59	
				evening set	5082 Jan 24 12:33	19° $\approx$ 26'33	
conjunction	5075 Dec 01 08:30	9° $\mathbb{M}$ 40'26	2°01'17	conjunction	5082 Feb 10 06:32	21° $\approx$ 25'31	0°-2'-2
minimum elong	5075 Dec 01 08:31	9° $\mathbb{M}$ 40'27	2°01'17	minimum elong	5082 Feb 10 06:31	21° $\approx$ 25'31	0°02'04
max. Earth dist.	5075 Dec 01 08:24	9° $\mathbb{M}$ 40'25	10.57186 AU	behind sun begin	5082 Feb 09 23:31	21° $\approx$ 23'27	
morning rise	5075 Dec 18 10:43	11° $\mathbb{M}$ 46'16		behind sun end	5082 Feb 10 13:31	21° $\approx$ 27'34	
retrograde	5076 Mar 27 17:43	19° $\mathbb{M}$ 09'49		max. Earth dist.	5082 Feb 10 03:33	21° $\approx$ 24'41	10.95095 AU
opposition	5076 Jun 03 16:33	15° $\mathbb{M}$ 49'40	2°23'05	morning rise	5082 Feb 26 23:37	23° $\approx$ 24'13	
min. Earth dist.	5076 Jun 03 17:13	15° $\mathbb{M}$ 49'33	8.61942 AU		5082 May 14 05:13	0° $\mathbb{M}$	
direct	5076 Aug 12 19:47	12° $\mathbb{M}$ 24'35		retrograde	5082 Jun 07 18:47	0° $\mathbb{M}$ 30'00	
evening set	5076 Nov 26 00:32	20° $\mathbb{M}$ 03'00			5082 Jul 02 18:17	30° $\mathbb{M}$	
conjunction	5076 Dec 13 03:58	22° $\mathbb{M}$ 08'04	1°49'28	opposition	5082 Aug 17 00:00	27° $\approx$ 11'38	0°-18'-15
minimum elong	5076 Dec 13 04:01	22° $\mathbb{M}$ 08'05	1°49'29	min. Earth dist.	5082 Aug 17 02:00	27° $\approx$ 11'16	8.95632 AU
max. Earth dist.	5076 Dec 13 02:57	22° $\mathbb{M}$ 07'46	10.66394 AU	direct	5082 Oct 26 16:03	23° $\approx$ 51'58	
morning rise	5076 Dec 30 03:35	24° $\mathbb{M}$ 12'00			5083 Jan 27 12:23	0° $\mathbb{M}$	
	5077 Feb 26 08:24	0° $\mathbb{M}$		evening set	5083 Feb 05 04:08	0° $\mathbb{M}$ 59'40	
retrograde	5077 Apr 09 04:03	1° $\mathbb{M}$ 29'35		conjunction	5083 Feb 21 21:11	2° $\mathbb{M}$ 58'17	0°-27'-47
	5077 May 22 05:34	30° $\mathbb{M}$		minimum elong	5083 Feb 21 21:10	2° $\mathbb{M}$ 58'17	0°27'48
opposition	5077 Jun 16 13:14	28° $\mathbb{M}$ 10'18	2°05'13	max. Earth dist.	5083 Feb 21 18:58	2° $\mathbb{M}$ 57'38	10.95702 AU
min. Earth dist.	5077 Jun 16 14:13	28° $\mathbb{M}$ 10'07	8.70859 AU	morning rise	5083 Mar 10 13:57	4° $\mathbb{M}$ 56'50	
direct	5077 Aug 26 00:35	24° $\mathbb{M}$ 46'19		retrograde	5083 Jun 19 22:20	12° $\mathbb{M}$ 04'22	
	5077 Nov 18 13:41	0° $\mathbb{M}$		opposition	5083 Aug 29 08:04	8° $\mathbb{M}$ 45'25	0°-49'-19
evening set	5077 Dec 08 14:43	2° $\mathbb{M}$ 17'36		min. Earth dist.	5083 Aug 29 09:09	8° $\mathbb{M}$ 45'13	8.95325 AU
conjunction	5077 Dec 25 15:38	4° $\mathbb{M}$ 20'54	1°32'51	direct	5083 Nov 07 19:18	5° $\mathbb{M}$ 26'08	
minimum elong	5077 Dec 25 15:40	4° $\mathbb{M}$ 20'55	1°32'52	evening set	5084 Feb 16 19:11	12° $\mathbb{M}$ 32'28	
max. Earth dist.	5077 Dec 25 14:05	4° $\mathbb{M}$ 20'26	10.74952 AU	conjunction	5084 Mar 04 11:37	14° $\mathbb{M}$ 31'02	0°-52'-26
morning rise	5078 Jan 11 13:09	6° $\mathbb{M}$ 23'10		minimum elong	5084 Mar 04 11:36	14° $\mathbb{M}$ 31'02	0°52'28
retrograde	5078 Apr 21 11:35	13° $\mathbb{M}$ 35'44		max. Earth dist.	5084 Mar 04 10:20	14° $\mathbb{M}$ 30'39	10.94465 AU
opposition	5078 Jun 29 06:02	10° $\mathbb{M}$ 17'05	1°42'07	morning rise	5084 Mar 21 04:25	16° $\mathbb{M}$ 29'47	
min. Earth dist.	5078 Jun 29 06:45	10° $\mathbb{M}$ 16'57	8.78890 AU	retrograde	5084 Jul 01 03:05	23° $\mathbb{M}$ 40'18	
direct	5078 Sep 07 22:39	6° $\mathbb{M}$ 54'12		opposition	5084 Sep 09 16:39	20° $\mathbb{M}$ 20'33	-1°-18'-28
evening set	5078 Dec 20 21:41	14° $\mathbb{M}$ 18'46		min. Earth dist.	5084 Sep 09 17:27	20° $\mathbb{M}$ 20'24	8.93210 AU
conjunction	5079 Jan 06 20:30	16° $\mathbb{M}$ 20'33	1°12'23	direct	5084 Nov 18 20:08	17° $\mathbb{M}$ 01'27	
minimum elong	5079 Jan 06 20:32	16° $\mathbb{M}$ 20'34	1°12'24	evening set	5085 Feb 27 11:23	24° $\mathbb{M}$ 07'44	
max. Earth dist.	5079 Jan 06 19:12	16° $\mathbb{M}$ 20'10	10.82407 AU	conjunction	5085 Mar 16 03:26	26° $\mathbb{M}$ 06'33	-1°-15'-3
morning rise	5079 Jan 23 16:13	18° $\mathbb{M}$ 21'27		minimum elong	5085 Mar 16 03:24	26° $\mathbb{M}$ 06'33	1°15'04
retrograde	5079 May 03 15:03	25° $\mathbb{M}$ 30'12		max. Earth dist.	5085 Mar 16 01:50	26° $\mathbb{M}$ 06'05	10.91450 AU
opposition	5079 Jul 11 19:31	22° $\mathbb{M}$ 12'00	1°14'59	morning rise	5085 Apr 01 20:48	28° $\mathbb{M}$ 05'47	
min. Earth dist.	5079 Jul 11 20:17	22° $\mathbb{M}$ 11'51	8.85618 AU		5085 Apr 18 15:18	0° $\mathbb{M}$	
direct	5079 Sep 20 15:09	18° $\mathbb{M}$ 50'07		retrograde	5085 Jul 13 10:54	5° $\mathbb{M}$ 20'28	
evening set	5080 Jan 01 22:42	26° $\mathbb{M}$ 08'49		opposition	5085 Sep 22 02:25	1° $\mathbb{M}$ 59'47	-1°-44'-35
conjunction	5080 Jan 18 19:41	28° $\mathbb{M}$ 09'22	0°49'05	min. Earth dist.	5085 Sep 22 03:29	1° $\mathbb{M}$ 59'35	8.89377 AU
minimum elong	5080 Jan 18 19:43	28° $\mathbb{M}$ 09'23	0°49'06		5085 Oct 20 17:50	30° $\mathbb{M}$	
max. Earth dist.	5080 Jan 18 18:19	28° $\mathbb{M}$ 08'58	10.88379 AU	direct	5085 Nov 30 21:54	28° $\mathbb{M}$ 40'38	
	5080 Feb 03 06:43	0° $\approx$			5086 Jan 09 23:35	0° $\mathbb{M}$	
morning rise	5080 Feb 04 14:03	0° $\approx$ 09'12		evening set	5086 Mar 11 05:47	5° $\mathbb{M}$ 48'08	
retrograde	5080 May 14 17:59	7° $\approx$ 15'34		conjunction	5086 Mar 27 22:00	7° $\mathbb{M}$ 47'34	-1°-34'-42
opposition	5080 Jul 23 06:35	3° $\approx$ 57'35	0°45'04				



minimum elong	5086 Mar 27 21:57	7°Υ47'33	1°34'43	morning rise	5092 Jun 27 08:53	24°Π09'38	
max. Earth dist.	5086 Mar 27 20:17	7°Υ47'03	10.86784 AU		5092 Aug 21 13:48	0°Ϸ	
morning rise	5086 Apr 13 16:25	9°Υ47'38		retrograde	5092 Oct 11 14:50	2°Ϸ09'02	
retrograde	5086 Jul 25 21:48	17°Υ07'32			5092 Dec 02 17:56	30°RΠ	
opposition	5086 Oct 04 14:22	13°Υ45'48	-2°-6'-37	opposition	5092 Dec 19 15:00	28°Π41'18	-2°-5'-3
min. Earth dist.	5086 Oct 04 15:20	13°Υ45'37	8.83974 AU	min. Earth dist.	5092 Dec 19 13:11	28°Π41'40	8.33973 AU
direct	5086 Dec 13 00:35	10°Υ26'26		direct	5093 Feb 24 18:04	25°Π17'38	
evening set	5087 Mar 23 03:28	17°Υ36'20			5093 May 11 15:46	0°Ϸ	
				evening set	5093 Jun 06 02:06	3°Ϸ00'01	
conjunction	5087 Apr 08 20:37	19°Υ36'43	-1°-50'-33				
minimum elong	5087 Apr 08 20:35	19°Υ36'43	1°50'34	conjunction	5093 Jun 23 15:38	5°Ϸ12'43	-1°-31'-11
max. Earth dist.	5087 Apr 08 20:01	19°Υ36'32	10.80639 AU	minimum elong	5093 Jun 23 15:41	5°Ϸ12'44	1°31'13
morning rise	5087 Apr 25 16:31	21°Υ37'57		max. Earth dist.	5093 Jun 23 18:33	5°Ϸ13'39	10.29987 AU
retrograde	5087 Aug 07 13:58	29°Υ04'01		morning rise	5093 Jul 11 09:01	7°Ϸ26'41	
opposition	5087 Oct 17 05:00	25°Υ41'07	-2°-23'-32	retrograde	5093 Oct 25 15:37	15°Ϸ30'53	
min. Earth dist.	5087 Oct 17 04:58	25°Υ41'07	8.77197 AU	opposition	5094 Jan 02 05:08	12°Ϸ02'41	-1°-39'-8
direct	5087 Dec 25 06:12	22°Υ21'24		min. Earth dist.	5094 Jan 02 02:33	12°Ϸ03'12	8.26423 AU
evening set	5088 Apr 03 05:59	29°Υ34'48		direct	5094 Mar 10 03:32	8°Ϸ38'02	
	5088 Apr 06 18:14	0°Ϸ		evening set	5094 Jun 20 01:30	16°Ϸ26'52	
conjunction	5088 Apr 20 00:51	1°Ϸ36'33	-2°-1'-49	conjunction	5094 Jul 07 19:29	18°Ϸ41'51	-1°-7'-40
minimum elong	5088 Apr 20 00:49	1°Ϸ36'32	2°01'50	minimum elong	5094 Jul 07 19:32	18°Ϸ41'51	1°07'41
max. Earth dist.	5088 Apr 20 01:20	1°Ϸ36'42	10.73245 AU	max. Earth dist.	5094 Jul 07 22:46	18°Ϸ42'53	10.23129 AU
morning rise	5088 May 06 22:51	3°Ϸ39'18		morning rise	5094 Jul 25 16:48	20°Ϸ57'54	
retrograde	5088 Aug 19 13:27	11°Ϸ12'04		retrograde	5094 Nov 08 20:14	29°Ϸ05'26	
opposition	5088 Oct 28 22:47	7°Ϸ48'01	-2°-34'-25	opposition	5095 Jan 15 22:33	25°Ϸ37'01	-1°-7'-17
min. Earth dist.	5088 Oct 28 21:55	7°Ϸ48'11	8.69303 AU	min. Earth dist.	5095 Jan 15 19:49	25°Ϸ37'35	8.20300 AU
direct	5089 Jan 05 13:29	4°Ϸ27'47		direct	5095 Mar 23 17:44	22°Ϸ11'23	
evening set	5089 Apr 15 14:24	11°Ϸ45'42			5095 Jul 03 12:40	0°Ϸ	
				evening set	5095 Jul 04 08:25	0°Ϸ06'12	
conjunction	5089 May 02 11:36	13°Ϸ49'09	-2°-7'-46				
minimum elong	5089 May 02 11:35	13°Ϸ49'09	2°07'48	conjunction	5095 Jul 22 06:12	2°Ϸ23'03	0°-40'-3
max. Earth dist.	5089 May 02 12:13	13°Ϸ49'20	10.64901 AU	minimum elong	5095 Jul 22 06:13	2°Ϸ23'03	0°40'04
	5089 May 12 02:58	15°Ϸ		max. Earth dist.	5095 Jul 22 09:02	2°Ϸ23'57	10.17883 AU
morning rise	5089 May 19 12:31	15°Ϸ53'46		morning rise	5095 Aug 09 06:38	4°Ϸ40'44	
retrograde	5089 Sep 01 17:23	23°Ϸ33'33		retrograde	5095 Nov 23 02:57	12°Ϸ49'55	
opposition	5089 Nov 10 20:34	20°Ϸ08'26	-2°-38'-27	opposition	5096 Jan 29 18:35	9°Ϸ21'33	0°-31'-11
min. Earth dist.	5089 Nov 10 19:30	20°Ϸ08'38	8.60618 AU	min. Earth dist.	5096 Jan 29 16:20	9°Ϸ22'01	8.15961 AU
direct	5090 Jan 17 23:49	16°Ϸ47'29		direct	5096 Apr 05 12:54	5°Ϸ55'00	
evening set	5090 Apr 28 05:27	24°Ϸ10'48		evening set	5096 Jul 17 21:32	13°Ϸ54'56	
					5096 Jul 26 10:25	15°Ϸ	
conjunction	5090 May 15 05:44	26°Ϸ16'16	-2°-7'-53				
minimum elong	5090 May 15 05:45	26°Ϸ16'16	2°07'55	conjunction	5096 Aug 04 21:59	16°Ϸ13'04	0°-9'-56
max. Earth dist.	5090 May 15 06:07	26°Ϸ16'23	10.55970 AU	minimum elong	5096 Aug 04 22:00	16°Ϸ13'04	0°09'57
morning rise	5090 Jun 01 10:19	28°Ϸ23'02		behind sun begin	5096 Aug 04 16:07	16°Ϸ11'12	
	5090 Jun 15 01:44	0°Π		behind sun end	5096 Aug 05 03:53	16°Ϸ14'56	
retrograde	5090 Sep 15 02:27	6°Π09'53		max. Earth dist.	5096 Aug 05 00:15	16°Ϸ13'46	10.14541 AU
opposition	5090 Nov 23 22:35	2°Π43'44	-2°-35'-3	morning rise	5096 Aug 23 00:13	18°Ϸ31'44	
min. Earth dist.	5090 Nov 23 21:43	2°Π43'55	8.51536 AU	asc. node	5096 Dec 04 16:41	26°Ϸ40'37	
	5091 Jan 03 17:22	30°RϷ		retrograde	5096 Dec 06 09:30	26°Ϸ40'46	
direct	5091 Jan 30 16:54	29°Ϸ21'58		opposition	5097 Feb 11 16:05	23°Ϸ12'42	0°07'00
	5091 Feb 26 08:35	0°Π		min. Earth dist.	5097 Feb 11 14:21	23°Ϸ13'04	8.13646 AU
evening set	5091 May 11 04:08	6°Π51'19		direct	5097 Apr 19 13:44	19°Ϸ45'20	
				evening set	5097 Aug 01 14:50	27°Ϸ49'13	
conjunction	5091 May 28 08:23	8°Π59'05	-2°-1'-48		5097 Aug 18 16:05	0°Ϸ	
minimum elong	5091 May 28 08:25	8°Π59'05	2°01'50				
max. Earth dist.	5091 May 28 09:18	8°Π59'22	10.46873 AU	conjunction	5097 Aug 19 16:41	0°Ϸ07'55	0°20'59
morning rise	5091 Jun 14 17:07	11°Π08'14		minimum elong	5097 Aug 19 16:40	0°Ϸ07'55	0°20'59
retrograde	5091 Sep 28 17:48	19°Π01'44		max. Earth dist.	5097 Aug 19 18:22	0°Ϸ08'27	10.13274 AU
opposition	5091 Dec 07 04:42	15°Π34'42	-2°-23'-53	morning rise	5097 Sep 06 19:13	2°Ϸ26'48	
min. Earth dist.	5091 Dec 07 03:37	15°Π34'55	8.42502 AU	retrograde	5097 Dec 20 12:48	10°Ϸ34'00	
direct	5092 Feb 12 14:46	12°Π12'00		opposition	5098 Feb 25 14:05	7°Ϸ06'26	0°44'55
evening set	5092 May 23 10:56	19°Π47'47		min. Earth dist.	5098 Feb 25 12:45	7°Ϸ06'42	8.13438 AU
				direct	5098 May 03 18:12	3°Ϸ38'24	
conjunction	5092 Jun 09 19:46	21°Π58'02	-1°-49'-28	evening set	5098 Aug 16 10:04	11°Ϸ44'49	
minimum elong	5092 Jun 09 19:49	21°Π58'03	1°49'30				
max. Earth dist.	5092 Jun 09 21:43	21°Π58'39	10.38058 AU	conjunction	5098 Sep 03 11:57	14°Ϸ03'22	0°50'38



minimum elong	5098 Sep 03 11:55	14° <u>11</u> 03'21	0°50'38
max. Earth dist.	5098 Sep 03 13:01	14° <u>11</u> 03'42	10.14068 AU
morning rise	5098 Sep 21 13:15	16° <u>11</u> 21'44	
retrograde	5099 Jan 03 14:06	24° <u>11</u> 25'38	
opposition	5099 Mar 11 11:31	20° <u>11</u> 58'45	1°20'08
min. Earth dist.	5099 Mar 11 10:24	20° <u>11</u> 58'59	8.15235 AU
direct	5099 May 17 23:08	17° <u>11</u> 30'21	
evening set	5099 Aug 31 05:08	25° <u>11</u> 37'49	
conjunction	5099 Sep 18 05:39	27° <u>11</u> 55'34	1°17'14
minimum elong	5099 Sep 18 05:36	27° <u>11</u> 55'33	1°17'15
max. Earth dist.	5099 Sep 18 06:19	27° <u>11</u> 55'47	10.16784 AU
	5099 Oct 04 11:45	0° <u>11</u>	
morning rise	5099 Oct 06 04:20	0° <u>11</u> 12'46	
retrograde	5100 Jan 17 12:48	8° <u>11</u> 12'10	
opposition	5100 Mar 25 07:33	4° <u>11</u> 46'12	1°50'28
min. Earth dist.	5100 Mar 25 06:43	4° <u>11</u> 46'22	8.18905 AU
direct	5100 Jun 01 03:20	1° <u>11</u> 17'40	
evening set	5100 Sep 14 21:33	9° <u>11</u> 24'36	
conjunction	5100 Oct 02 19:33	11° <u>11</u> 40'58	1°39'14
minimum elong	5100 Oct 02 19:30	11° <u>11</u> 40'57	1°39'14
max. Earth dist.	5100 Oct 02 19:52	11° <u>11</u> 41'04	10.21323 AU
morning rise	5100 Oct 20 14:41	13° <u>11</u> 56'29	